Vol. 885 Number 2

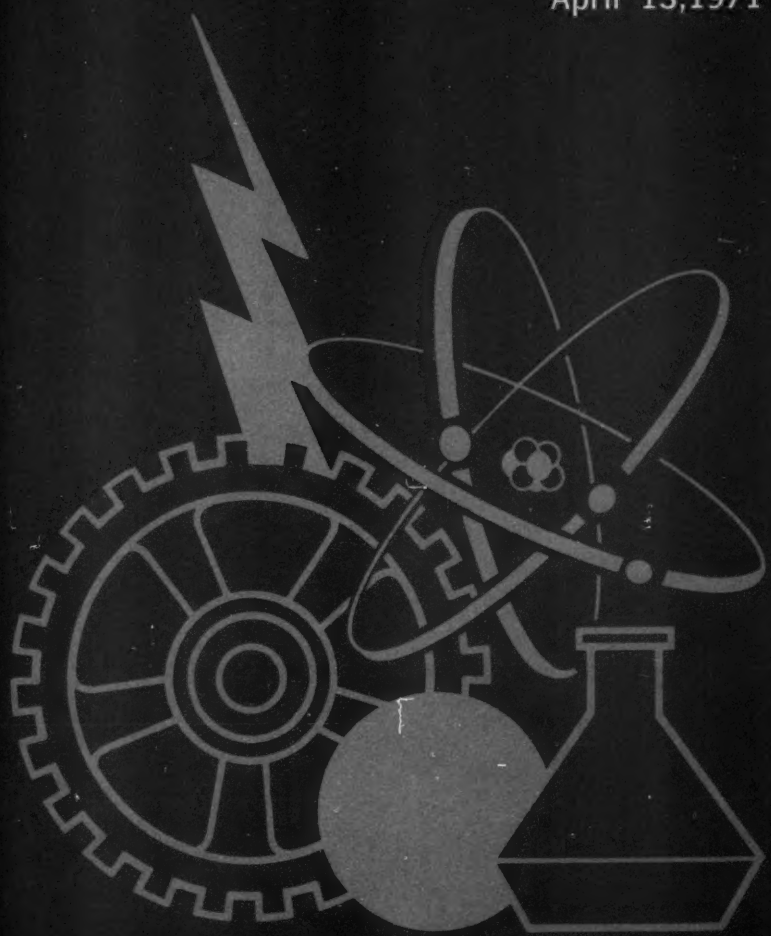
OFFICIAL GAZETTE

of the UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

April 13,1971



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

April 13, 1971 Volume 885 Number 2

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Certificates of Correction for the Week of Apr. 13, 1971

D. 219,720	3,535,277	3,542,630	3,547,912
2,806,843	3,535,353	3,542,676	3,548,240
3,342,039	3,535,445	3,542,763	3,548,909
3,403,192	3,535,502	3,542,820	3,549,400
3,453,381	3,535,522	3,543,506	3,549,762
3,460,263	3,536,154	3,543,554	3,551,520
3,482,771	3,536,742	3,543,614	3,551,565
3,488,363	3,536,878	3,543,725	3,551,609
3,496,172	3,537,263	3,543,764	3,552,145
3,498,967	3,537,564	3,543,876	3,552,368
3,506,714	3,538,234	3,543,926	3,553,458
3,516,146	3,538,548	3,543,931	3,553,528
3,519,200	3,538,688	3,543,932	3,553,550
3,520,998	3,539,582	3,544,403	3,553,683
3,521,552	3,539,954	3,544,496	3,554,204
3,522,416	3,540,435	3,544,979	3,554,292
3,524,077	3,540,572	3,545,163	3,554,468
3,524,360	3,540,649	3,545,334	3,554,555
3,524,676	3,541,059	3,545,463	3,554,752
3,528,083	3,541,081	3,545,752	3,555,206
3,530,136	3,541,093	3,546,214	3,556,866
3,531,573	3,541,592	3,546,333	3,556,879
3,531,854	3,541,688	3,546,351	3,557,123
3,533,320	3,541,972	3,546,352	3,557,219
3,534,127	3,542,256	3,546,654	3,557,508
3,534,887	3,542,274	3,547,132	
3,535,054	3,542,357	3,547,151	

Classification Order No. 403

Classification Order No. 403, dated Mar. 18, 1971, incorporates changes in the following classes:

10, BOLT, NAIL, NUT, RIVET AND SCREW MAKING
30, CUTLERY
51, ABRADING
56, HARVESTERS
77, BORING AND DRILLING—Abolished
79, BUTTON MAKING
82, TURNING
98, VENTILATION
144, WOODWORKING
145, WOODWORKING TOOLS
184, LUBRICATION
211, SUPPORTS, RACKS
296, LAND VEHICLES, BODIES AND TOPS
318, ELECTRICITY, MOTIVE POWER SYSTEMS
408, CUTTING BY USE OF ROTATING AXIALLY MOVING TOOL—Established

All changes will be incorporated in the Manual of Classification replacement pages dated April 1971.

WALTER W. BURNS, JR.,
Administrator, Office of Search Systems and Documenation.

Service by Publication

Werner E. Beier

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on June 20, 1968, of an application for patent entitled "Spinnerette for Extruding T-Shaped Filaments," on behalf of Werner E. Beier, whose last known address is Sardis View Lane, Matthews, North Carolina. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor Paul Paliyenko without execution by the said Werner E. Beier. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Werner E. Beier in connection with the said application must be taken within thirty days of the publication of this notice.

F. H. BRONAUGH,
Deputy Assistant Commissioner of Patents.

Patents Available for Licensing or Sale

D. 218,253. FISH BOWL. Wade H. Wolfe, 5211 Arbardee Lane, Fair Oaks, Calif., 95628.

3,348,043. FLUORESCENT DISPLAY SIGN COMPOSED OF ROTATABLE TRIANGULAR PRISMS. Orion M. Mehus, 210 W. 103rd St., New York, N.Y., 10025.

3,514,579. ELECTRIC SYRUP WARMER. Fred E. Sanders, 503 E. 108th St., Cleveland, Ohio, 44108.

3,524,287. BUILDING STRUCTURE. Mario Toselli, 2, Rue de la Republique 84, Avignon, France.

3,535,667. ELECTRICAL SAFETY DEVICE. Henry C. Harnish, Jr., and Anthony J. Osello, Elcock Ave., Boonton, N.J.,07005.

3,536,223. MOLDED PLASTIC CONTAINER. Mauser KG, Cologne, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,545,413. INTERNAL COMBUSTION ROTARY ENGINE. E. M. Shelby, 1548 Old Bayshore Road, San Jose, Calif., 95112.

3,546,945. FLUID SAMPLER. William H. Collins, 1002 Chipley St., Baker, La., 70714.

3,559,756. WRONG WAY TRAFFIC CONTROL SYSTEM. Noel M. Torres, P.O. Box 10731, San Diego, Calif., 92139.

3,567,336. PROPELLERS. Sz. Bartha, Kew Gardens, N.Y. Correspondence to: Alexander Retl, 345 E. 57th St., New York, N.Y., 10022.

3,568,902. DEVICE FOR CARRYING AND SECURING SKI EQUIPMENT. Samuel M. Highberger, 5543 Westwood Lane, Birmingham, Mich., 48010.

3,570,368. DUPLICATING APPARATUS. Edward C. Clark. Correspondence to: Marechal, Biebel, French & Bugg, Winters Bank Bldg., Dayton, Ohio, 45402.

The following 2 patents are offered by: Joseph Sallah, Rte. 1, Box 85, Dyer, Ind., 46311.

D. 219,784. PLASTIC EDUCATIONAL TOY.

D. 219,785. PLASTIC EDUCATIONAL TOY.

The following 3 patents are offered by: John W. Barnd, 32 Gollybrook Road, Paramus, N.J.

3,351,128. MULTI-ZONE TEMPERATURE CONTROL.

3,496,991. FLUID TEMPERATURE REGULATING METHOD AND APPARATUS.

3,515,345. MULTI-ZONE TEMPERATURE CONTROL.

General Motors Corporation is prepared to grant nonexclusive licenses under the following 2 patents upon reasonable terms.

Application for license may be addressed to Director, Patent Section, General Motors Building, 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,421,996. METERING TUBE.

3,425,296. POWER TRAIN.

General Electric Company is prepared to grant non-exclusive licenses under the following 7 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to, General Electric Company, Patent Counsel, Housewares Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,489,937. MOTOR CONSTRUCTION.

Applications for license under the following patent may be addressed to: Patent Counsel Industry Components & Metallurgical, General Electric Company, 15160 W. Eight Mile Road, Oak Park, Mich., 48237.

3,509,597. DIAMOND HIGH PRESSURE CELL.

Applications for license under the following 5 patents may be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa., 19101.

3,549,436. LAYERED PROPELLANT COMPOSITION CONSISTING OF AN ELECTRICAL CONDUCTOR AND INSULATOR.

3,551,708. HEAT SHIELDED THERMIONIC CONVERTER.

3,478,280. PULSE WIDTH MODULATED LASER.

3,536,924. TRACKING DEVICE FOR MOVING WAVE ENERGY SOURCE TO OPTICAL DETECTORS UTILIZED TO DETERMINE RANGE AND VECTOR VELOCITY OF A MOVING WAVE ENERGY SOURCE.

3,537,877. LOW TEMPERATURE METHOD FOR PRODUCING AMORPHOUS BORON-CARBON DEPOSITS.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 23, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-13-69
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-30-69
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-08-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-02-69
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-22-69
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	6-18-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-09-69
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-06-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	12-23-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-21-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	12-22-69
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-01-69
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-14-69
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	4-06-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-06-70

Expiration of patents: The patents within the range of numbers indicated below expire during April 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,673,978 to 2,677,128, inclusive
Plant Patents ..... Numbers 1,267 to 1,273, inclusive

PLANT PATENTS

GRANTED APRIL 13, 1971

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,040
APPLE TREE

Joseph D. Norton, 1120 Loftin Drive, Auburn, Ala. 36830

Filed Feb. 24, 1969, Ser. No. 801,871
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—35 1 Claim

An apple tree which was discovered by a bud sport as a limb mutation of the variety Vance Red Delicious. In contrast with its parent, the new variety is of the spur type and the fruit is borne on spurs along the branches and ripens earlier, from two to three weeks earlier, than Vance Red Delicious.

3,041
AZALEA PLANT

Spencer R. Smith, Rockwood, Mich., assignor to Post Gardens, Inc., Rockwood, Mich.

Filed May 7, 1969, Ser. No. 822,749
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—57 1 Claim

1. A new and distinct variety of azalea plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a bushy and medium vigorous plant habit, heavier and stronger stems than those of the parent variety "Chimes," attractive, dark glossy green foliage which is somewhat darker, heavier, thicker and more oval in shape than the foliage of "Chimes," a profuse and uniform blooming habit when grown in the greenhouse, an exceptionally large bloom size ranging from 4 to 5 inches as compared to the average 2 to 3 inch bloom size of "Chimes," a distinctive and attractive bloom shape which is more flat than in "Chimes," with the blooms having ruffled edges and raised, semi-double centers, a distinctive and attractive iridescent pink bloom color which is brighter and more glowing than the bloom color of "Chimes," and good lasting qualities of both foliage and blooms.

3,042
STRAWBERRY PLANT

Harold A. Johnson, Jr., and Harold E. Thomas, Watsonville, Calif., assignors to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed June 11, 1969, Ser. No. 832,510
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 1 Claim

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

3,043
STRAWBERRY PLANT

Harold A. Johnson, Jr., and Harold E. Thomas, Watsonville, Calif., assignors to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed June 11, 1969, Ser. No. 832,511
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 1 Claim

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

3,044
ROSE PLANT

Robert V. Lindqust, Riverside, Calif., assignor to Hemet Wholesale, Hemet, Calif.

Filed June 17, 1969, Ser. No. 834,180
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and bushy plant habit, attractive bright Irish green foliage which covers the plant well, perfectly formed flower buds which open slowly to attractive blooms usually borne singly and having symmetrically shaped petals forming large, classic flowers which retain their classic form even when fully open, a distinctive and attractive soft medium pink flower color, and a pleasing fruity flower fragrance.

3,045
APPLE TREE

Ralph Banta, Green Forest, Ark., assignor to Merle J. Lucas, doing business as Green Forest Nursery, Green Forest, Ark.

Filed June 18, 1969, Ser. No. 834,564
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 1 Claim

This disclosure concerns a new and distinct variety of apple tree characterized by the fruit having a dark red uniform color and having an elongated shape with heavier stems than the Jonathan tree.

3,046
ALMOND TREE

Frederick R. Wells, Rte. 3, Box 80–A, Chico, Calif. 95926

Filed July 22, 1969, Ser. No. 844,675
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—30 1 Claim

A variety of almond tree which is of medium size, vigorous and dense in growth with abundant foliage, blooms heavily, and is a regular and very heavy producer of nuts well distributed on the tree; the nuts being large, having a high percentage of kernel to shell, and of a form more elongated than the nuts of the Nonpareil and which the present variety most nearly resembles.

PATENTS

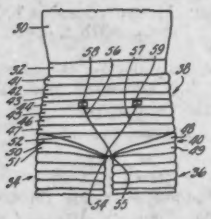
APRIL 13, 1971

GENERAL AND MECHANICAL

3,574,236
PRESSURIZED SUIT-HIP WAIST

Douglas E. Getchell, Windsor Locks; Edwin G. Vail, Simsbury; Michael A. Marroni, Jr., Weatogue, Conn., and Harvey A. Smith, Hampden, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 20, 1968, Ser. No. 785,711
Int. Cl. A62b *17/00*
U.S. Cl. 2—2.1 6 Claims

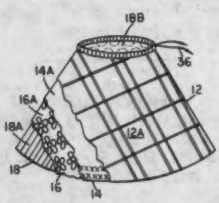


A torso in a pressurized suit is joined to substantially parallel convolutes in the thighs of each leg by a hip-waist, or lower trunk portion which includes parallel convolutes substantially across the area from the groin to the waist, and a small number of shaped convolutes together with a sheer panel to form a hip and crotch transition between the parallel convolutes of the lower trunk and the parallel convolutes of the thighs. The shear panel may comprise three panels with the warp of the center panel perpendicular to the warp of the outer panels. A pair of doubly-crossed cables, from the center of the lower trunk in front through the crotch to the center of the lower trunk in the back, provide plug-load restraint.

3,574,237
REVERSIBLE GARMENT

Muriel E. Reynolds, San Francisco, Calif. (954 Maddux Drive, Daly City, Calif. 94015)

Filed July 28, 1969, Ser. No. 845,216
Int. Cl. A41d *1/14*
U.S. Cl. 2—211 8 Claims

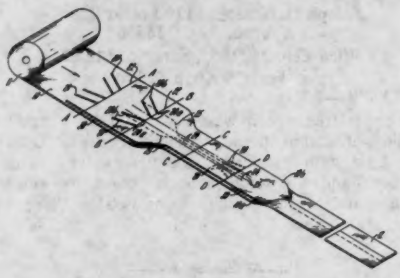


A garment is made up of a plurality of skirts, positioned one inside the other. Each skirt has a number of loops fixed to its waist portion, and a belt passes through these loops, holding the skirt together. Both sides of each skirt are patterned, and the order of the patterns may be changed by moving the outermost skirt to the innermost position, by completely reversing the plurality of skirts by pulling them all inside out, and the like.

3,574,238
METHOD FOR PREFORMING A TAPERED SLEEVE FOR USE IN DISPOSABLE GARMENTS

Marion A. McCurry, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 2, 1969, Ser. No. 854,438
Int. Cl. A41d *23/10*
U.S. Cl. 2—243 11 Claims

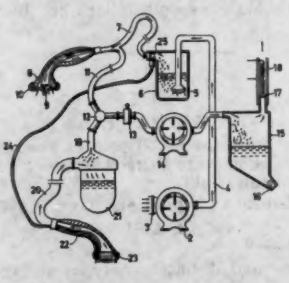


A method of continuously preforming tapered sleeves for use in the manufacture of garments. Rows of transversely spaced adhesive strips are successively applied to a continuous web with each strip extending at an angle to the longitudinal axis of the web. The web is then folded along longitudinal lines passing through the leading and trailing points of each strip with the longitudinal line through the leading point of each strip being folded over the longitudinal line through the trailing point. The side portions of the web are then folded inwardly and secured together to form a flat tubular web shape. The web is then cut to sleeve length along successive transverse lines passing through the leading points of each row of adhesive strips with the row of adhesive strips of each length creating a tapered section in the sleeve.

3,574,239
APPARATUS FOR WASHING PATIENTS HYGIENICALLY

Soren Sollerud, Norrkoping, Sweden, assignor to Svenska Utvecklingsaktiebolaget, Stockholm, Sweden

Filed Dec. 26, 1968, Ser. No. 786,988
Claims priority, application Sweden, Jan. 12, 1968, 448/68
Int. Cl. A47k *7/00*, *17/00*
U.S. Cl. 4—1 7 Claims



The invention concerns apparatus for bathing a bedridden patient whereby washing medium continuously is supplied centrally through a pressure nozzle and after its use is sucked off peripherally through a suction nozzle arranged about the pressure nozzle.

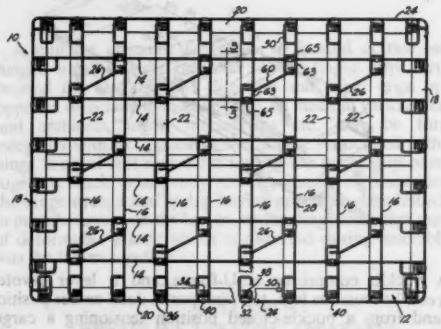
ERRATUM

For Class 4—254 see:
Patent No. 3,574,242

3,574,240
SPRING AND FRAME ASSEMBLY

Walter V. Slominski, Lexington, Ky., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed Oct. 25, 1968, Ser. No. 770,707
Int. Cl. A47c 23/02
U.S. Cl. 5—247 9 Claims

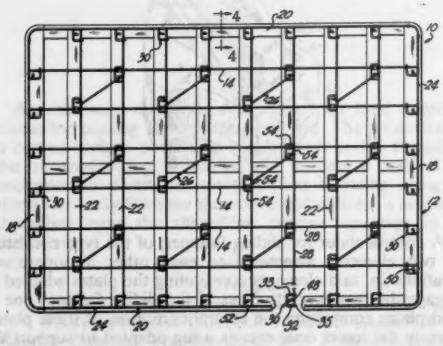


A spring and frame assembly, particularly for box springs for beds, consisting of a plurality of main springs arranged crisscross fashion on a rectangular supporting frame and internal support springs supported on the frame and secured to the main springs. Each of the springs has a resilient end portion mounted on the frame, and most of these end portions are constructed so that they terminate in mounting torsion bars which extend transversely of the frame members, thereby transmitting spring forces to the frame as compression forces.

3,574,241
SPRING AND FRAME ASSEMBLY PARTICULARLY FOR BOX SPRINGS

Walter V. Slominski, Lexington, Ky., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed Jan. 6, 1969, Ser. No. 789,314
Int. Cl. A47c 23/02, 23/04
U.S. Cl. 5—247 11 Claims

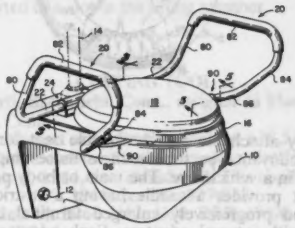


A spring and frame assembly, particularly for box springs for beds, consisting of a plurality of main springs arranged crisscross fashion on a rectangular supporting frame and internal support springs supported on the frame and secured to the main springs. Each of the main springs has a resilient end portion movable between an upwardly extending position when not loaded and a downwardly compressed position when under load, and each of these end portions includes a pair of generally upright spacer bars that function to limit the magnitude of the downward movement of the main spring when under load.

3,574,242
ARM ASSEMBLY FOR WATER CLOSET SEAT

Jeff James Trowbridge, Sheboygan Falls, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed Apr. 8, 1969, Ser. No. 814,370
Int. Cl. E03d 11/00
U.S. Cl. 4—254 10 Claims

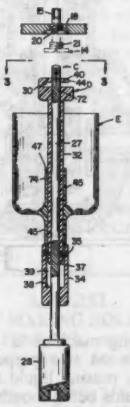


A pair of arms is provided having one end thereof fixed to the underside of a water closet seat. The opposite ends of the arms are inturned and supported within spaced bearings mounted in a support bracket fixed to the bowl of the water closet. Retaining pin means is provided for holding the arms in place. A pair of inner bearings are provided, and each includes a portion which supports the inner end of the arm means for rotation with respect to the support bracket, this inner bearing means also including a portion which supports both the water closet seat and the cover thereof for swinging movement with respect to the support bracket.

3,574,243
DRIPSTICK TOOL

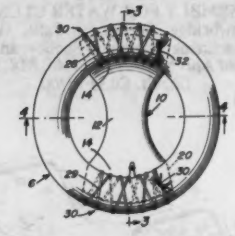
Edward E. Yaste, Burlingame, Calif., assignor to Powerflow Engineering and Equipment Company, Inc., Palo Alto, Calif.

Filed Aug. 5, 1968, Ser. No. 750,186
Int. Cl. B25f 1/04
U.S. Cl. 7—14.6 4 Claims



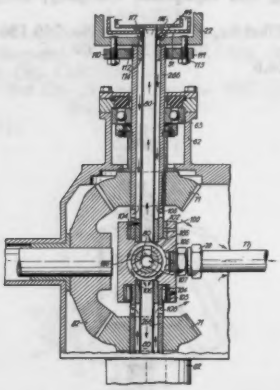
A tool for withdrawing and replacing an aircraft dripstick between a rotationally secured first position within the underside of an aircraft and a second position of fuel volume indication without spillage of fuel.

3,574,244
KIDDIE'S TUBE FLOAT
Philip L. Huss, Woodlane Road, Mount Holly, N.J.
Filed June 17, 1969, Ser. No. 834,052
Int. Cl. B63c 9/16
U.S. Cl. 9—347 5 Claims



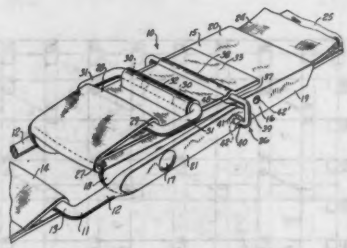
A readily attachable and detachable seat for an annular inflatable buoyant-type tube such as those employed as an inner tube in a vehicle tire. The main or body portion of the attachment provides a saddle having a restricted median portion and progressively enlarged terminal end portions provided with integral adapters. Each adapter is channel-shaped to conformingly seat a portion of the inflated tube. Rows of lace-accommodating holes are provided at the respective ends of the attachment to accommodate manually attachable laces. These laces are threaded through the rows of holes provided therefor and are crossed and wrapped around the inflated tube with the free ends tied together.

3,574,245
ROTATIONAL CASTING OF PLASTICS MATERIAL
Rolf Gordon Dohm, London, England, assignor to Dohm Plastics Machinery Limited, London, England
Filed Sept. 27, 1968, Ser. No. 763,284
Claims priority, application Great Britain, Oct. 4, 1967, 45,234/67
Int. Cl. B29c 5/04
U.S. Cl. 18—26 10 Claims



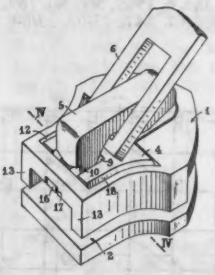
A rotational casting machine is provided in which the moulds are rotatable on two perpendicular axes and are heated or cooled by passing liquid through jackets around the moulds, the moulds being mounted on tubular housings rotatable in a bevel box which is itself rotated on a tubular shaft; the shaft, housing and box providing a first path for liquid to or from the moulds. A second path is provided by pipes concentric with the shaft and the housings. The moulds are preferably detachable, the fluid path therethrough being completed on mounting them on their housings. For additional rigidity, the housings may all be journaled in a bearing block central of the bevel box, the bearing block also forming a distribution block for the pipes defining the second path for liquid.

3,574,246
BUCKLE FOR CARGO-HOLDING STRAPS
Roy Norton, Milwaukee, and Glenn S. Thompson, Brown Deer, Wis.
Filed Feb. 11, 1969, Ser. No. 798,315
Int. Cl. A44b 21/00
U.S. Cl. 24—68 29 Claims



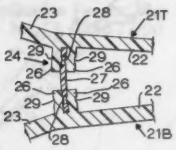
A buckle comprising a U-frame and a lever pivoted thereto, between its legs, to swing past a dead center position to and from a buckle-closed position tensioning a cargo-holding strap having one end secured to the frame and its other end portion looped around a terminal member on the lever. Latch means that can be manually or automatically activated or even held in an inactive condition, provides for releasably holding the lever against movement out of its strap-tensioning position.

3,574,247
SLIDE FASTENER CONTROL ELEMENT
Horst Jakob, Choisy-le-Roe, France, assignor to Societe Financiere Francaise De Licences Et Brevets, Choisy-le-Roe (Val de Marne), France
Filed July 24, 1969, Ser. No. 844,578
Claims priority, application France, July 26, 1968, 160.850
Int. Cl. A44b 19/26
U.S. Cl. 24—205.15 2 Claims



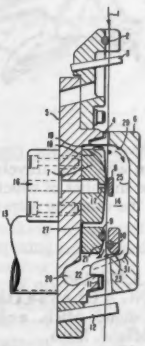
A control slider for sliding fastener, of the type consisting of two elements assembled to each other in superposed relationship, said elements constituting the plates adapted to engage the two opposite faces of the sliding fastener one of said plates comprising the central core. One of these plates, namely the lower one, carries a lug adapted to support the ancillary elements of the slider, such as its locking member and its pull tab, the other plate being formed with a cavity adapted to receive said lug therein. The surface area of said cavity is sufficient to permit the passage of said ancillary elements carried by said lug and the two main elements are fastened to each other by crimping or elastic snap engagement of said hollowed upper plate over said lug rigid with the central core and carried by the other or lower plate.

3,574,248
CLIP FOR CURRENCY AND OTHER PAPERS
Armand J. Gaglia, 339 Broadway-Apt. 104, Alameda, Calif.
Filed Dec. 12, 1968, Ser. No. 783,331
Int. Cl. A44b *21/00*
U.S. Cl. 24—252 7 Claims



A clip for currency or papers is formed of two leaves hinged together near one end having finger grip portions beyond the hinge in one direction and paper grips in the opposite direction. The leaves may be made in various shapes and emblems, logos, monograms etc. may be formed integrally with or applied to the leaves. Associated with the hinge is a resilient means for biasing the paper grip portions together. Such means may be a torsion spring imbedded in the hinge eyes, a leaf spring having opposite edges imbedded in protuberances on the leaves, or the hinge members may be of deformable plastic which is distorted during assembly to bias the leaves together.

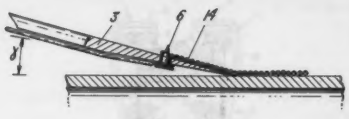
3,574,249
THREADLINE TREATING APPARATUS
Louis Gray Cannon, Grifton, N.C., assignor to E. I. duPont de Nemours & Company, Wilmington, Del.
Filed July 14, 1969, Ser. No. 841,441
Int. Cl. D02g *3/00*
U.S. Cl. 28—1.4 4 Claims



An enclosure surrounds a jet device for fluid treating a threadline passing through the enclosure. The jet device has a curved surface positioned with respect to the threadline, the stream-forming orifice of the jet and a wall of the enclosure to divert the treating fluid traveling along the threadline away from the threadline and redirect it across the threadline near the threadline passage openings in the enclosure.

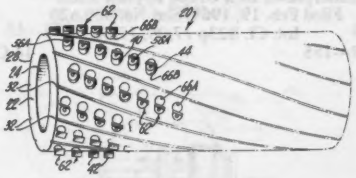
3,574,250
APPARATUS FOR REMOVING TEXTILE THREAD WASTE FROM A TEXTILE THREAD CARRIER
Maurice Bissauge, Francheville-Le-Bas, France, assignor to Societe Rhodiaceta, Paris, France
Filed Dec. 20, 1968, Ser. No. 785,717
Claims priority, application France, Dec. 20, 1967, 133,126
Int. Cl. D03d *45/58*
U.S. Cl. 28—19 4 Claims

The Specification describes an apparatus for removing thread wastes from a textile thread carrier, in which a lifting member, having an elongate flattened point shape, is inserted by relative movement between the lifting member and carrier, between the carrier and the threads therein. The thus



lifted threads are cut by a breaking member which may be a knife or a heated needle on the top of the lifting member. Alternatively a heated member, a rotating disc or fixed knife may be inserted in a slot in the lifting member.

3,574,251
CUTTING TOOL
Marc A. Corti, Brookfield, Conn., assignor to Marcoloy, Inc., Stamford, Conn.
Continuation-in-part of application Ser. No. 628,515, Feb. 24, 1967, which is a continuation-in-part of application Ser. No. 379,530, July 1, 1964, now abandoned. This application Feb. 19, 1969, Ser. No. 849,932
Int. Cl. B26d *1/12, 1/00;* B24b *19/00*
U.S. Cl. 29—105 15 Claims

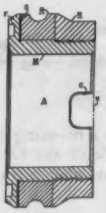


A cutterhead carries a plurality of cutting tools arranged in helical rows and disposed in separate recesses which preferably are round. A locking structure including a locking cup and screw is disposed in a separate round recess adjacent the recess in which the cutting tool is disposed and partly in communication with that recess at the cutter surface, whereby automatic alignment of these portions will be achieved upon insertion. The shank of each tool has a tapered portion which is inclined to the axis of the recess with the widest part of the tool being located at the bottom of the recess into which it is disposed. The locking cup also has a tapered wedge portion which engages the cutting tool wedge portion. When the locking screw is forced downwardly, it forces the locking cup's tapered surface against the corresponding juxtaposed cutting tool's tapered shank portion, thereby locking the cutting tool within its recess. Preferably the shanks are bored longitudinally so that an adjusting tool can be passed to an adjusting screw disposed in the lower threaded portion of the bore to adjust the relative positioning of the cutting tool with respect to the surface of the head. Means are also provided whereby the withdrawal of the locking cup releases the cutting tool and a method is disclosed whereby the locking of the cutting tool is made more effective.

3,574,252
METHOD OF MAKING ROLL ASSEMBLY
Selwyn R. Rackoff, Pittsburgh, and Martin J. Dempsey, Bethel Park, Pa., assignors to American Shear Knife Co., West Homestead, Pa.
Original application Dec. 22, 1967, Ser. No. 692,785, now Patent No. 3,435,499. Divided and this application Oct. 28, 1968, Ser. No. 771,115
Int. Cl. B21d *53/12;* B21h *1/12, 1/14;* B21k *1/02, 1/04*
U.S. Cl. 29—148.4 4 Claims

A tungsten-carbide roll assembly is made with the roll insert mounted on a mandrel. The insert has an inside

diameter equal to the outside diameter of the mandrel and the mandrel is cooled to a low temperature and then the insert is slipped over it. When the mandrel rises to room temperature, the insert is firmly held without being



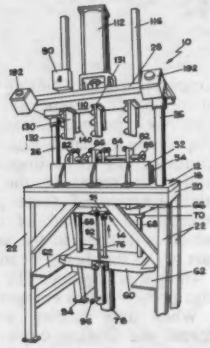
excessively stressed. The insert is clamped firmly between the flange of the mandrel and a nut by screwing the nut on with a spanner wrench which engages grooves in the nut. Slots coextensive with the grooves are then cut in the mandrel and a key is inserted in the grooves and slots.

3,574,253

CONSTRUCTION UNIT ASSEMBLY AND APPARATUS

Charles Kay, Wyoming, Mich., assignor to J. Raymond Christy Enterprises, Inc., Grand Rapids, Mich.

Filed Feb. 19, 1969, Ser. No. 800,620
Int. Cl. B23p *17/00, 19/00*
U.S. Cl. 29—155 **14 Claims**



A machine and method for rapidly and accurately assembling panels or slabs as of wood and interconnecting binder plates as of steel into structural building unit components, employing dynamic panel spacing and retention in combination with panel slotting and plate insertion.

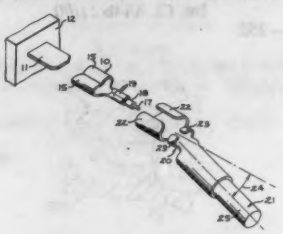
3,574,254

TOOL FOR APPLYING ELECTRICAL TERMINALS

Marshall T. Harris, Louisville, Ky., assignor to General Electric Company

Filed July 1, 1969, Ser. No. 838,200
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 **5 Claims**

A tool is provided for installing female electrical terminals onto male electrical terminals, the tool comprising a head member having opposed sidewall portions which encompass the female terminal sufficiently to limit the deformation thereof during installation, and having at least one stop portion to limit the relative movement of the female terminal and the head member. An elongate handle is secured to the head member and disposed at an angle thereto sufficient to



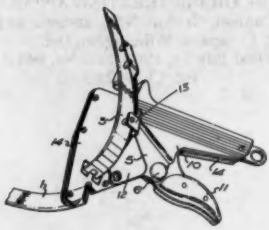
minimize interference with any electrical conductors secured to the female terminal.

3,574,255

TOOLS OR DEVICES FOR APPLYING TRAVELLERS TO THE RINGS OF RING SPRINNING OR TWISTING MACHINES

John Mortimer, Lochwinnoch, Scotland, assignor to Eadie Bros. & Company Limited, Paisley, Scotland

Filed Sept. 16, 1968, Ser. No. 762,239
Int. Cl. B23p *19/04*
U.S. Cl. 29—207 **3 Claims**



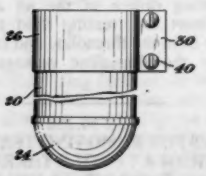
A tool for applying travelers to the rings of textile ring spinning and like frames in which the travelers are applied by a sliding double blade, one member of which is moved by the actuation of the tool and the other by a spring on movement of the first member.

3,574,256

METHOD OF REPAIRING A GLASS-COATED SURFACE

Raymond Burt Chase, Midland, Mich., assignor to The Dow-Chemical Company, Midland, Mich.

Filed May 27, 1968, Ser. No. 732,361
Int. Cl. B23p *17/00*
U.S. Cl. 29—401 **2 Claims**

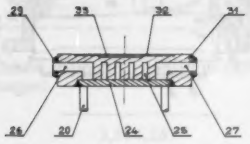


A hollow, terminating structure coated with glass to resist corrosion, when chipped, is patched with a conforming sheath of corrosion resistant metal secured through opposed projecting flanges and filled with resin cured in situ.

3,574,257
AUTOMATIC CUTTING OF A SUBSTRATE COATED WITH THIN LAYERS

Georges Du Bois, and Ghislaine Goupil, Paris, France, assignors to Societe Lignes Telegraphiques Et Telephoniques, Paris, France

Filed Apr. 28, 1969, Ser. No. 819,678
Claims priority, application France, May 10, 1968, 151,382
Int. Cl. B23p *17/00*
U.S. Cl. 29—424 3 Claims

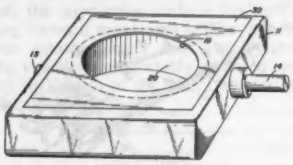


A process for cutting a substrate the surface of which bears a large number of identical or different components and which are formed at least to some extent by thin films. The substrate is kept stationary relatively to the cutting tool by immersion in a liquid and freezing thereof. The liquid may be water.

3,574,258
METHOD OF MAKING A TRANSREFLECTOR FOR AN ANTENNA

Charles W. May; Franklin A. Porter, Indianapolis, and John W. Pickett, Fort Wayne, Ind., assignors to the United States of America as represented by the Secretary of the Navy

Filed Jan. 15, 1969, Ser. No. 791,270
Int. Cl. H01p *11/00;* H01q *13/00*
U.S. Cl. 29—600 1 Claim



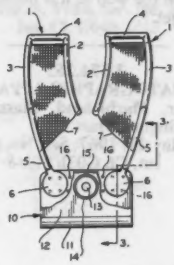
A method of making a transreflector for an antenna comprising first preparing a grating of equally spaced parallel wires, and then attaching said gating to a flat sheet of plastic material. The sheet of plastic material is then shaped into a segment of a right circular cone having a parabolic end surface on which the spaced parallel wires are positioned, by use of a heated-vacuum die. The formed sheet of plastic material is then attached to a metallic mounting ring.

3,574,259
DEVICE FOR OBTAINING IMPRESSION OF OCCLUSAL SURFACES OF THE TEETH IN CENTRIC OCCLUSION

Russel J. Jones, 13804 Lake Shore Drive, Cleveland, Ohio

Filed Nov. 6, 1969, Ser. No. 874,578
Int. Cl. A61c *9/00*
U.S. Cl. 32—17 9 Claims

The tray comprises two identical frames each open at the front and having a buccal frame member and a lingual frame member connected by a rear frame member. The buccal member at its forward end has a handle which, at its forward end, has a connecting portion. A clamp common to the frames detachably clamps the connecting portions in adjusted positions wherein the frames are spaced edgewise from each other in coplanar relation with the lingual members innermost. The frames can be adjusted edgewise by swinging them about the connecting portions and by moving the connecting portions bodily toward and away from each other. A sheet of soft, flexible woven sheet material bridges from the lingual to the buccal frame member of each frame. Each frame is composed of plastic with the members, handle, and connecting portion integral. The lateral margins of the

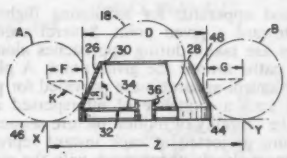


sheet material are embedded in the plastic midway between the upper and lower surfaces of the frame.

3,574,260
GOLF BALL SPHERICITY GAUGE AND PUTTING DEVICE

Walter M. Smyk, 437 Valencia Drive, South San Francisco, Calif., and Frank E. Turner, 3 Greenfield Court, San Mateo, Calif. 94403

Filed Sept. 29, 1969, Ser. No. 861,568
Int. Cl. G01b *3/34*
U.S. Cl. 33—178 4 Claims

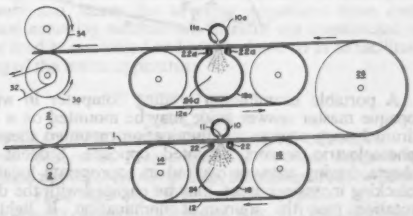


A golf ball sphericity gauge having an aperture into which snugly fits the largest cross-sectional area of a standard-size golf ball. A support is fixed relative to the body of the device for positively supporting the golf ball in such position. The outer dimensions of the device are such that, if it is placed on a horizontal surface and contacted by a golf ball rolling on that surface, the golf ball will fall within the area defined by a standard-size golf hole.

3,574,261
APPARATUS AND METHOD FOR DRYING PERMEABLE WEBS

Herman H. Bailey, Belmont, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

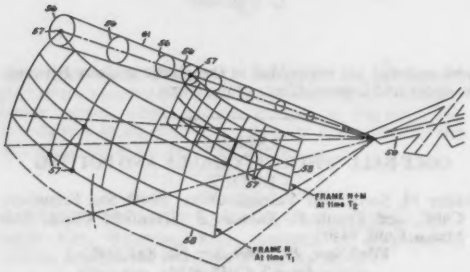
Filed Sept. 24, 1968, Ser. No. 771,379
Int. Cl. F26b *5/00*
U.S. Cl. 34—23 8 Claims



A moving textile web is expunged of liquid by a very high-pressure air jet which is directed through a thin slot transverse to the direction of travel of the web. The jet is

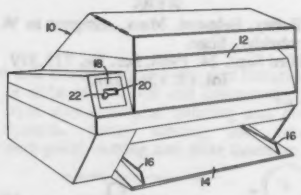
directed downwardly at the web which is horizontally supported by an open weave wire belt. The wire belt moves at a speed different from that of the web in order to avoid a pattern formation on the web as it is impressed on the belt by the force of the air jet.

3,574,262
CINEMATOGRAPHIC APPARATUS
John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed May 25, 1967, Ser. No. 641,329
Int. Cl. G03b *19/18*
U.S. Cl. 35—12 **40 Claims**



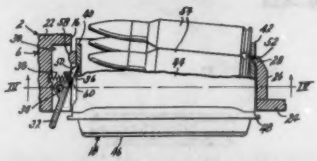
A method and apparatus for simulating flight along a random path toward a given point. Several sequences of motion pictures are taken during approaches along closely spaced known paths toward the given point. A plurality of projectors and control apparatus are provided for projecting onto a display area a sequence of interspersed individual pictures from the plurality of motion picture sequences. The individual picture projected at each instant represents the picture which most closely corresponds with the picture that would be taken from a point simulated by the controls of the flight-simulating apparatus at that instant.

3,574,263
EXAMINATION GRADING COMPUTER
Joe Del Elia, Scottsdale, Ariz., assignor to Educational Computer Systems, Inc., Phoenix, Ariz.
Filed July 11, 1968, Ser. No. 744,590
Int. Cl. G09b *7/00*; **G06k** *7/14*
U.S. Cl. 35—48 **5 Claims**



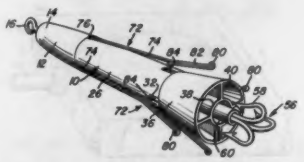
A portable examination grading computer in which an opaque master answer guide may be mounted on a rotating drum having sources of illumination mounted therein, and photoelectric sensors mounted opposite. Student answer sheets, having answers marked in appropriate locations by blacking in answer areas, may be engaged with the drum for rotation past the source of illumination. If light passes through an appropriate perforation in the opaque master answer guide and through an unmarked answer area on the student answer sheet, the computer circuitry will actuate a marker adjacent the incorrect answer on the answer sheet and will tally the total of incorrect answers.

3,574,264
MAGAZINE ASSEMBLY FOR AUTOMATIC RIFLES
Ernest P. Simmons, Sr., Olathe, Kans. 66061
Filed July 14, 1969, Ser. No. 841,396
Int. Cl. F41c *25/02*
U.S. Cl. 42—6 **4 Claims**



In an automatic rifle having an ammunition magazine insertable in a recess provided therefore in the receiver portion of the gun, a projection on said magazine preventing its insertion into said recess in any but its correct position, and means preventing interference by said projection with the latch means for securing said magazine in said recess.

3,574,265
FISH LURE WITH PROJECTABLE HOOK ASSEMBLY
Alfred M. Gibbons, Amarillo, Tex., assignor to Holiday Products, Inc.
Filed Dec. 27, 1968, Ser. No. 787,487
Int. Cl. A01k *83/02*
U.S. Cl. 43—35 **5 Claims**

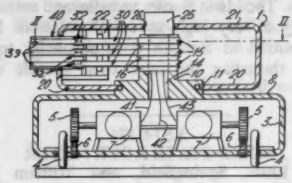


A fishing lure characterized by an attractive plastic or an equivalent plug having a blunt-nose leading end, a median body portion, and a conical rearwardly and outwardly flaring tail portion. The constructed plug has an axial bore which houses a spring-loaded projectable and retractable plunger and fishhook assembly. When cocked and in a position close up to the tail, the fishhook is rendered substantially weedless. When the fish takes the plug and squeezes in on the spring wire triggers, the triggers function to impart rotation to a detent-equipped latching and releasing collar, whereupon the spring-loaded plunger is released and sets the prongs of the hook in the mouth of the fish.

3,574,266
SLIPRING ASSEMBLY
Kamal Ahmed, Middlesex, England, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 25, 1969, Ser. No. 852,702
Claims priority, application Great Britain, June 26, 1969, 32,235/69
Int. Cl. A63h *33/26*
U.S. Cl. 46—240 **8 Claims**

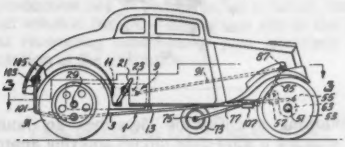
A carriage having a pair of driven wheels, each wheel of the pair being driven by a separate electric motor to permit differential steering of the carriage. A slipring assembly is provided on the carriage and forms a part of a feed path for

supplying power to the electric motors. The carriage can be arranged immediately below a board on which a toy vehicle



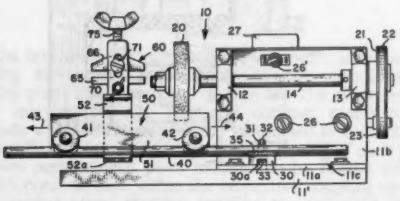
stands and can be indirectly coupled to the toy vehicle by a permanent magnet.

3,574,267
WHEEL STAND TOY VEHICLE
Louis O. Schorsch, 653 Sherwood Circle, Monterey Park, Calif.
Filed July 17, 1969, Ser. No. 842,524
Int. Cl. A63h *17/00*
U.S. Cl. 46—211 **10 Claims**



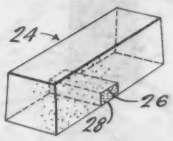
The fifth wheel is periodically pivoted into and out of contact with the supporting surface for performing wheel stands during forward movement of the vehicle by a spring motor driven rotating crank and lever system. The front wheels of the vehicle are adjustably mounted on the side rails for changing the length of the wheel base to accommodate various body styles and models.

3,574,268
TOOL SHARPENING APPARATUS
Frederick A. Buse, 141 Loma Alta Ave., Los Gatos, Calif.
Filed Feb. 19, 1969, Ser. No. 800,586
Int. Cl. B24b *3/52, 41/02*
U.S. Cl. 51—92 **8 Claims**



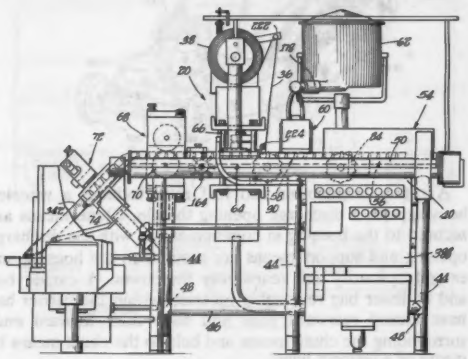
A scissor-sharpening apparatus wherein a vise holds a scissor blade to be sharpened and the vise is pivotally mounted on a carriage. Supporting the carriage are longitudinally spaced rollers which travel along a rod. The carriage travels along the rod in a rectilinear path and also is movable along an arcuate path about the axis of the rod. The rectilinear path for the carriage is parallel to the axis of a grinding wheel. In this manner, the scissor blade is brought into position parallel with the grinding wheel and is freely movable toward and away from the grinding wheel to effect the sharpening of the scissor blade.

3,574,269
BRICK WITH WEAR INDICATOR
Robert F. Rea, Bloomfield Township, Oakland County, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio
Filed Mar. 9, 1966, Ser. No. 533,033
Int. Cl. E04b *1/12*
U.S. Cl. 52—105 **3 Claims**



A ball mill has a lining of bricks with colored inserts extending toward the face of the brick from the back thereof for a distance of one-eighth to one-third the thickness of the brick. When the bricks wear to the point of possibly failing, the colored inserts are readily visible to show that the linear requires replacement. Preferably the colored inserts are of the same refractory material as the bricks themselves and have a coloring material added thereto. This minimizes contamination of the material being ball milled.

3,574,270
PACKAGING MACHINE
Guenter Rosendahl, Arlington Heights, Ill., assignor to Illinois Tool Works, Inc.
Filed Sept. 26, 1968, Ser. No. 762,749
Int. Cl. B65b *3/12*
U.S. Cl. 53—281 **13 Claims**

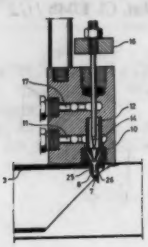


There is disclosed a machine for filling and assembling a plurality of packages which are initially interconnected and are then severed from each other. The machine is adapted to package food products such as milk and parts thereof including means for advancing containers, means for dispensing material into the containers, means for sealing the containers and means for severing containers from each other and actuating mechanisms therefor are constructed so as to be readily assembled and serviced and so as to facilitate cleaning of the entire apparatus.

3,574,271
APPARATUS FOR SEALING A VALVE OPENING
Nils Eric Andersson, Stromsnasbruk, Sweden, assignor to Skogsagarnas Industri Aktiebolag, Stromsnasbruk, Sweden
Filed Mar. 26, 1969, Ser. No. 810,687
Claims priority, application Sweden, Apr. 1, 1968, 4319/68
Int. Cl. B65b *7/02*
U.S. Cl. 53—285 **7 Claims**

A method and apparatus are provided for employing an adhesive into the valve opening of valve sacks in order to

produce a sealing of the valve opening after the sack has been filled. The adhesive is injected into the valve through an opening in the sack communicating with the inside of the



valve. The apparatus includes a punching member arranged to produce said opening and to deliver the adhesive in the desired amount.

3,574,272

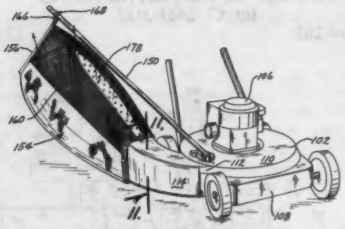
COMBINATION LAWNMOWER AND LEAF RAKE

Ralph W. Krewson, 629 Bompart, Webster Groves, Mo.

Original application Feb. 20, 1967, Ser. No. 617,408. Divided and this application Apr. 1, 1969, Ser. No. 812,009

Int. Cl. A01d *53/06*

U.S. Cl. 56—202 **7 Claims**



A rotary lawnmower and leaf rake includes a wheeled housing with a discharge opening therein. Chute means are secured to the housing in communication with the discharge opening and support means are secured to the housing and extend upwardly and rearwardly therefrom. A carrier bag and an inner bag removably received within the carrier bag have closed rearward ends and have their forward ends surrounding the chute means and held to the chute means by means of a resilient band.

3,574,273

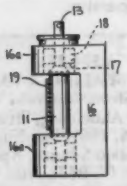
FALSE TWIST SPINDLE AND METHOD OF THREADING THE SAME

Richard G. Hilbert, Esmond, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed May 8, 1969, Ser. No. 823,027

Int. Cl. D02g *1/04;* **D01h** *7/92*

U.S. Cl. 57—77.3 **18 Claims**



Disclosed is a spindle blade for a false twist spindle characterized by a unitary element blade and a twist trapping pin that is mounted on one end of the spindle blade. The pin is located within the bore in the blade and the wall of the tube is characterized by the absence of any apertures therethrough. The blade is able to withstand rotational forces generated by a very high speed of rotation. Due to the enclosed position of the pin it is necessary to provide a method for threading the false twist spindle and such a method is also disclosed.

3,574,274

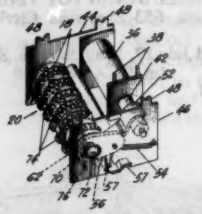
SOLID-STATE HOUR METER

Arthur J. Little, Springfield, and William R. Mayer, Rochester, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed May 5, 1969, Ser. No. 821,876

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 **7 Claims**



The following specification describes an hour meter assembly utilizing a solid-state circuit applying appropriately timed pulses to a coil capable of driving the meter dials with portions of the coil magnetic circuit and terminals supplying electrical power to the circuit serving to locate and secure an assembly of the solid-state circuit and dials in a meter case.

3,574,275

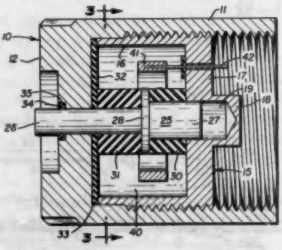
THERMALLY ACTUATED MOTOR WITH AUTOMATICALLY RETURNABLE SHAFT

Marvin A. Staschke, Glendora, Calif., assignor to Thermal Hydraulics Corporation, Glendora, Calif.

Filed Sept. 24, 1969, Ser. No. 860,594

Int. Cl. F01k *27/00*

U.S. Cl. 60—23 **12 Claims**



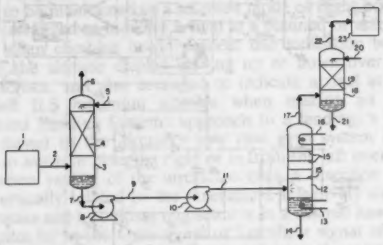
A thermally actuated motor provided with an axially reciprocable, automatically returnable shaft, comprising a differential diameter shaft having a radially extending flange between its larger and smaller diameter members, and a rubber sleeve surrounding each of said shaft members and bearing on opposite sides of the flange between said flange and end walls of a housing which contains the shaft, a heating element and expansible material. Pressure of the expansible heated material on the shaft through the rubber sleeves causes movement of the shaft in one direction, and withdrawal of pressure due to cooling of the expansible material automatically causes movement of the shaft in the opposite direction. The rubber sleeves also serve as seals to prevent loss of expansible material from the housing.

3,574,276

METHOD FOR TRANSPORTING ACETYLENE

Samuel Strelzoff, New York, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed June 12, 1968, Ser. No. 736,436
Int. Cl. F17c *11/00*; F17d *1/04*
U.S. Cl. 62—48 7 Claims



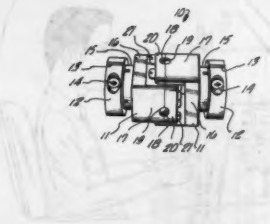
Acetylene is transported from a production site to a distant utilization site by dissolving the acetylene in liquid ammonia at the production site to form a liquid solution, transporting the liquid solution from the production site to the utilization site, and recovering substantially pure acetylene from the liquid solution at the utilization site.

3,574,277

FRICTIONLESS UNIVERSAL JOINT

T. O. Paine, Deputy Administrator of the National Aeronautics and Space Administration in respect to an invention of, and Sherwood D. Mayall, La Crescenta, Calif.

Filed Apr. 4, 1969, Ser. No. 813,488
Int. Cl. F16d *3/42*
U.S. Cl. 64—18 12 Claims



The invention disclosed herein describes a universal joint having two coupling members pivotally connected to a gimbal plate about two axes of rotation. The pivot members that interconnect the relatively rotating members each include a pair of sleeves flexibly connected to each other by a plurality of leaf springs. The relative flexing of each pair of sleeves permits each pivot member to be fixedly mounted within bores formed within the respective coupling members and gimbal plate, thereby enabling the universal joint to operate frictionlessly without lubrication.

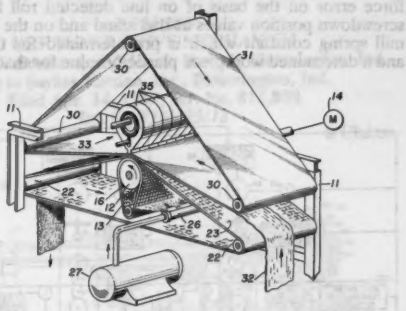
3,574,278

APPARATUS FOR IMPACT DYEING FIBERS

James G. T. Paterson, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed July 31, 1969, Ser. No. 846,535
Int. Cl. D06f *35/00*
U.S. Cl. 68—204 8 Claims

An apparatus for impact dyeing a bundle of fibers wherein the fiber bundle is sandwiched between an open belt and an impervious belt and brought into contact with a compartmented porous belt containing a dye, the porous belt contacting the open belt. Impact forces applied through the impervious belt to the porous belt drive the dye from the



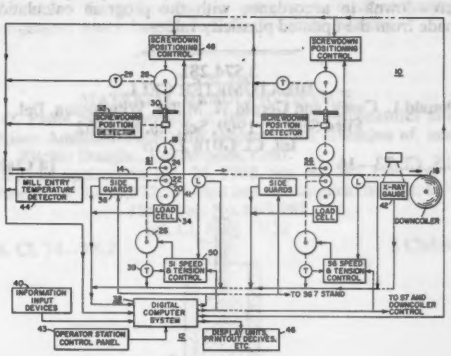
porous belt through the open belt and into the bundle of fibers.

3,574,279

PREDICTIVE GAUGE CONTROL METHOD AND APPARATUS WITH AUTOMATIC PLASTICITY DETERMINATION FOR METAL ROLLING MILLS

Andrew W. Smith, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 8, 1970, Ser. No. 3,579
Int. Cl. B21b *37/02, 37/08*
U.S. Cl. 72—7 15 Claims



A programmed computer control system provides online predictive roll force gauge control and screwdown offset gauge control for a tandem hot steel strip mill. A gauge control program calculates corrective screwdown movement including that predictively required at each gauge-controlled stand for optimum or near optimum gain correction of roll force error on the basis of online detected roll force and screwdown position values at that stand and on the basis of a mill spring constant which is predetermined for that stand and a workpiece plasticity value which is automatically determined from roll force and workpiece entry and delivery gauges at that stand. The control system operates the mill screwdowns in accordance with the program calculations.

3,574,280

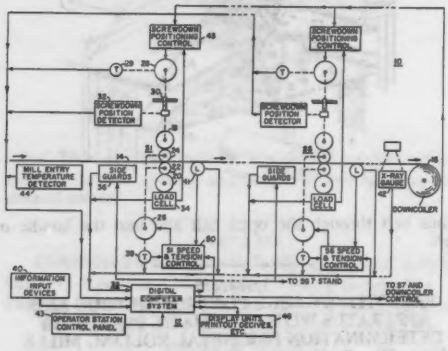
PREDICTIVE GAUGE CONTROL METHOD AND APPARATUS WITH ADAPTIVE PLASTICITY DETERMINATION FOR METAL ROLLING MILLS

Andrew W. Smith, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1968, Ser. No. 774,638
Int. Cl. B21b *37/12*
U.S. Cl. 72—8 12 Claims

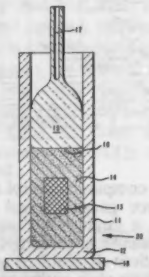
A programmed computer control system provides on line predictive roll force gauge control and screwdown offset

gauge control for a tandem hot steel strip mill. A gauge control program calculates corrective screwdown movement including that predictively required at each gauge controlled stand for optimum or near optimum gain correction of roll force error on the basis of on line detected roll force and screwdown position values at that stand and on the basis of a mill spring constant which is predetermined for that stand and a determined workpiece plasticity value for that stand.



The workpiece plasticity values in determining the screwdown control action at each stand are adaptively modified during the workpiece rolling period on the basis of in process measurements of roll force and screwdown position at that stand. The control system operates the mill screwdowns in accordance with the program calculations made from the updated plasticity values.

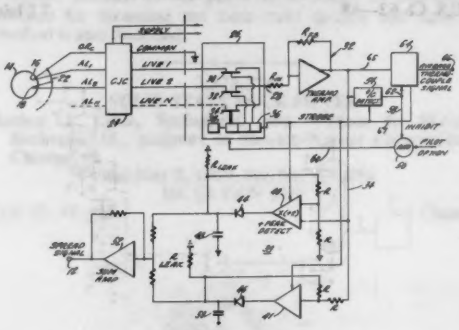
3,574,281
DILATOMETER CELL
Donald L. Casey, and Gerald W. Miller, Wilmington, Del.
Filed Sept. 2, 1969, Ser. No. 854,562
Int. Cl. G01n *25/16*
U.S. Cl. 73—16 **14 Claims**



A cubical dilatometer cell comprising a receptacle, a particulate filling medium for containing the sample contained within the receptacle, and a piston adapted to move linearly in response to volume changes in the sample and filling medium. The receptacle, piston and filling medium are all made from materials having a low coefficient of expansion. In a preferred embodiment, the dilatometer cell comprises a fused quartz cylinder and piston.

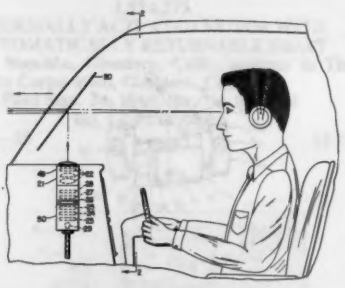
3,574,282
ENGINE TEMPERATURE SPREAD DETECTOR
Kenneth R. Curwen, Shirley, Southampton, England, assignor to Kollsman Instrument Corporation, Syosset, N.Y.
Filed Feb. 24, 1969, Ser. No. 801,730
Int. Cl. G01m *15/00*
U.S. Cl. 73—116 **5 Claims**

A temperature spread detector for detecting a difference in temperature at various areas of a machine, such as a jet engine. The spread detector includes thermocouples for establishing signals representative of the temperature at various points, which signals are then converted to a sequential waveform by multiplexing means with such waveform



being fed to minimum and maximum detectors which produce minimum and maximum values which, when accumulated in a summing amplifier, will produce a signal representative of temperature spread.

3,574,283
A NUMERIC COLLIMATED DISPLAY INCLUDING MEANS FOR PROJECTING ELEVATION, ATTITUDE AND SPEED INFORMATION
William R. Albers, 3615 Libo Place, Fairfax, Va. 22030
Filed Dec. 27, 1967, Ser. No. 693,779
Int. Cl. G02b *23/10, 27/14;* **G01c** *21/00*
U.S. Cl. 73—178 **5 Claims**



A simulated visual reference collimated heads-up display system for aircraft pilots arranged in the pilot's normal line of sight through the windshield and utilizing the established basic theories and principals of flight enabling a pilot, even an inexperienced pilot, to fly safely and with precision, maintaining good air speed and attitude control in clear visual reference flying weather or in instrument or marginal weather conditions. The system employs reticle plate images projected on a screen disposed in the pilot's normal line of vision and comprising a horizon line image slaved to the aircraft's gyro horizon instrument; an attitude circle image fixedly related to the vertical centerline of the screen for selective positioning along the vertical centerline of the screen to depict the optimum nose attitude of the aircraft to be maintained for a selected mode of flight; a small airplane image fixedly related to the display screen and to the aircraft to depict the instantaneous pitch and bank attitudes and heading of the aircraft during all phases of flight including the takeoff and landing runs of the aircraft so the pilot can center the small airplane image in the attitude circle to establish the optimum nose attitude of the aircraft during any selected mode of flight; air speed and vertical speed line images pivoted to swing up and down about the ends of the

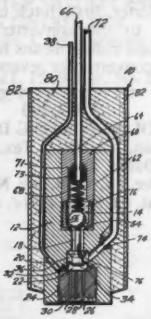
wings of the small airplane image and slaved to the aircraft's air speed and vertical speed instruments to indicate deviations from the optimum air speed and rate-of-climb or descent to be maintained at a selected mode of flight depicted by lateral alignment of the swinging line images to the respective wing portions of the small airplane image; an altitude display slaved to the aircraft's altimeter in a manner to move up or down over the screen when a deviation of selected magnitude in either direction from a preselected altitude to be maintained in a selected mode of flight occurs, and also arranged to indicate arrival at a planned or assigned altitude when climbing or on descent this indication being given by the altitude display moving up or down over the display screen, and also arranged to indicate arrival at the prescribed ILS minimum altitude when making an ILS (Instrument Landing System) approach to a landing; a yaw display slaved to the aircraft's yaw rate gyro system in a manner to move in from the right or in from the left over the screen when yawing of the aircraft occurs; a direction line image vertically related to the screen and selectively slaved to a compass and a compass bug settable to a desired heading by the pilot or to the Omnisignal or Localizer signal of the aircraft's Omnireceiver or Localizer receiver so the pilot can steer the small airplane image to laterally center it on the direction line image to maintain the selected heading; and an ILS circle image slaved to follow the indications of the aircraft's standard cross-pointer indicator instrument arranged to replace the attitude circle image when the pilot wants to make an ILS instrument landing approach and have the simulated visual reference flying display for guidance in maintaining optimum instrument flight using the same reference images and procedures.

3,574,284

PORE PRESSURE APPARATUS AND METHOD

Petur Thordarson, Kefavkik, Iceland, assignor to Laucks Laboratories, Inc., Redmond, Wash.

Filed June 26, 1967, Ser. No. 648,824
Int. Cl. G01l 7/08
U.S. Cl. 73—406 **5 Claims**



This invention is for a method and an apparatus for determining the pore pressure of liquid in the ground and earth structures. This invention makes it possible to determine the pore pressure at various depths in the ground and earth structure. The apparatus can be positioned at the desired depth in the ground or earth structure and the pore pressure determined. The apparatus comprises means for increasing the pressure so as to counteract the pore pressure in the ground. Also, there is a control unit for measuring the pressure. More particularly, there is a diaphragm and a valve means. The valve means connects with the diaphragm. The pore pressure against the diaphragm is counteracted by the pressure from the control means. When the valve means is closed, the pressure is indicated and does not change. It is possible then to know the pore pressure in the ground.

ERRATUM

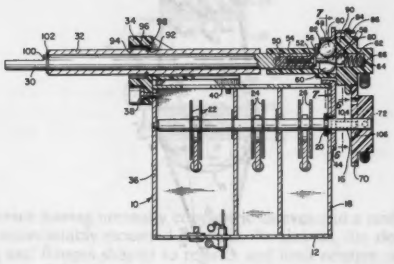
For Class 74—5.34 see:
Patent No. 3,575,093

3,574,285

UHF TUNER DRIVE MECHANISM

Alarico A. Valdettaro, and Joe G. Badger, Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Apr. 14, 1969, Ser. No. 815,898
Int. Cl. F16h 35/18
U.S. Cl. 74—10.52 **8 Claims**



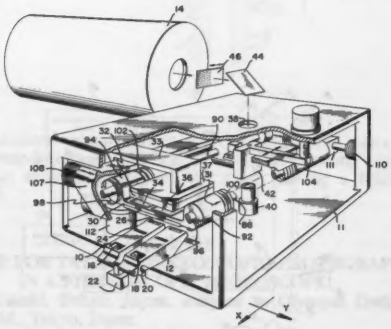
The control shaft and dial indicator shaft of the UHF tuner are mounted in bearings positioned on opposite ends of the tuner housing. The rear bearing comprises a ball-planetary speed reduction unit which is electrically isolated from both shafts. A high viscosity lubricant is employed between shafts and in the front bearing to provide a shaft-mounting arrangement which has the feel of a precision bearing.

3,574,286

MATERIAL HANDLING DEVICE

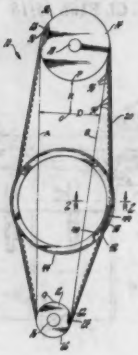
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and G. Ritchie Douglas, Los Angeles, Calif.

Original application Jan. 24, 1968, Ser. No. 700,120, now Patent No. 3,472,372. Divided and this application Oct. 6, 1969, Ser. No. 863,967
Int. Cl. F16j 15/52
U.S. Cl. 74—18.2 **3 Claims**



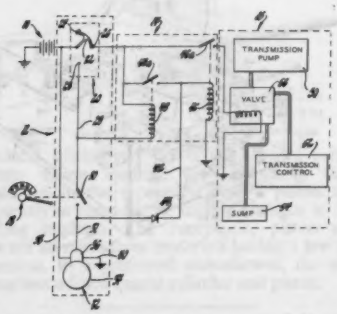
A stage which is supported on a nut that moves along a rotating threaded rod, wherein the nut and rod are sealed against a vacuum or other adverse environment. A pair of bellows is employed to hermetically seal the rod, a first of the bellows extending between the nut and a first end of the rod, and a second of the bellows extending between the nut and a second end of the rod. As the nut and stage thereon move toward the first end of the rod, the first bellows collapses while the second bellows expands, and visa versa.

3,574,287
BELT TENSION-ADJUSTING DEVICE
Walter C. Heidacker, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 19, 1969, Ser. No. 859,365
Int. Cl. F16h 7/12; F16g 1/28
U.S. Cl. 74—242.1 9 Claims



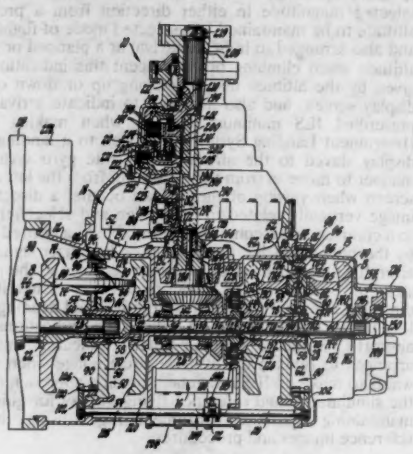
A belt-tension-adjusting device for a toothed belt and dual pulley drive arrangement, including an intermediate toothed pulley or sprocket wheel having an outside diameter larger than the respective diameters of the two pulleys, wherein the belt may be tensioned by manually holding one side of the belt away from the intermediate pulley, rotating the latter toward one of said dual pulleys, and releasing the side of the toothed belt to mesh with the teeth of the intermediate pulley in its new location.

3,574,288
TRANSMISSION DISABLING APPARATUS
Wallace E. Barth, Birmingham, and William E. Bell, Berkley, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 2, 1969, Ser. No. 863,290
Int. Cl. B60k 27/02, 27/08; F02n 11/10
U.S. Cl. 74—850 3 Claims



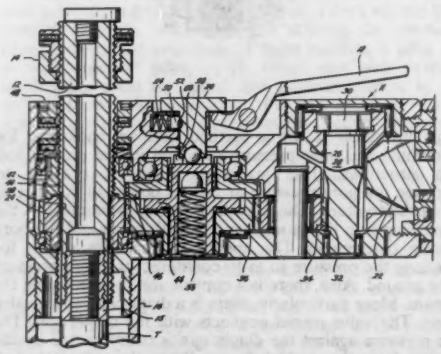
An automatic transmission in a vehicle is provided with a solenoid valve for dropping transmission fluid pressure. A relay circuit in conjunction with a conventional engine starting circuit actuates the solenoid valve to disable the transmission during the engine starting period.

3,574,289
TRANSMISSION AND CONTROL SYSTEM
Milton H. Scheiter, Bloomfield Hills, and Frank Dickenbrock, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 6, 1969, Ser. No. 822,122
Int. Cl. B60k 21/10; F16h 37/06
U.S. Cl. 74—864 20 Claims



A friction roller transmission including a prime mover, shaft means driven thereby, a pair of input races secured to the shaft means, a pair of output races secured to output shaft means, a set of rollers frictionally rotatable and tiltable between each set of input and output races for permitting continuously variable output/input speed ratios, hydraulic control means for automatically changing the tilt position of the rollers in order to select desired speed ratios in response to three variable input parameters, differential means for averaging speed differences between toric sections as received from the output shaft means, gear means for transferring the rotary output from the differential means to a fluid torque converter, first clutch means for connecting a final output shaft to the converter for forward vehicle operation, and second clutch means for connecting the final output shaft to the converter for reverse vehicle operation.

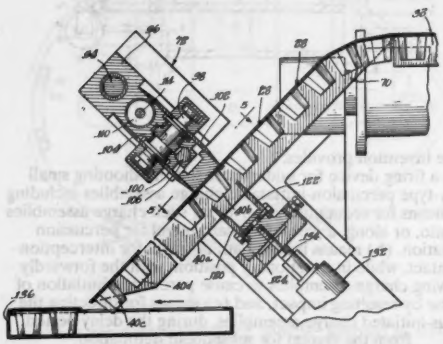
3,574,290
TOOL ACTUATING DEVICE
Richard E. Eckman, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Dec. 16, 1968, Ser. No. 783,824
Int. Cl. B23b 45/14, 47/18
U.S. Cl. 77—32.5 13 Claims



A tool actuating device to control both the speed and feed of the tool and to provide a preselected short period of time

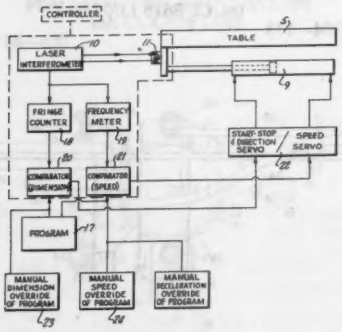
in which the tool dwells at its outermost extension before automatically being retracted.

3,574,291
PACKAGING APPARATUS
Guenter K. Rosendahl, Arlington Heights, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Sept. 26, 1968, Ser. No. 762,921
Int. Cl. B26d 7/14
U.S. Cl. 83—175 7 Claims



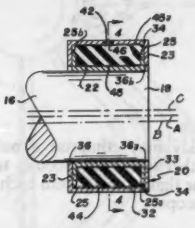
There is disclosed an apparatus for feeding interconnected packages along a path of travel, and guide means for directing the packages downwardly from said path of travel in a manner such that gravity causes the leading packages to move down the guide means and pull the following packages onto the guide means. A cutting mechanism is positioned adjacent the guide means for severing successive packages from the row while leaving sufficient interconnected packages on the guide means to maintain the desired pull on the following packages.

3,574,292
INTERFEROMETER MOTION AND VELOCITY CONTROLLER
Gene A. Butts, Escondido, Calif., assignor to DoAll Company, Des Plaines, Ill.
Filed Aug. 21, 1969, Ser. No. 851,990
Int. Cl. F15b 21/02
U.S. Cl. 91—37 5 Claims



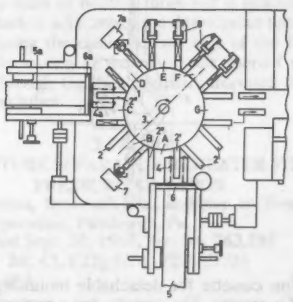
An interferometer measuring system which constitutes means of measuring the magnitude and velocity of relative motion between two parts along a defined path, coacts with numerical command reference data to effect and control relative motion between the parts produced by drive means which may be incapable of dimensional or velocity predictability.

3,574,293
ANTIKNOCK BEARING DEVICE
Joseph A. Vriend, Box 505, Squamish, British Columbia, Canada
Filed Nov. 5, 1968, Ser. No. 773,459
Int. Cl. F16j 1/16
U.S. Cl. 92—84 3 Claims



A device having normally concentric sleeves and a resilient insert nonrotatably mounted between the sleeves, the sleeves having end flanges shaped to restrict and limit relative radial movement of the sleeves to compress and release the insert.

3,574,294
DEVICE FOR MAKING CONTAINERS
Alwin Egli, Dachsen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft
Filed Aug. 14, 1969, Ser. No. 850,020
Int. Cl. B31b 1/02
U.S. Cl. 93—44.1 2 Claims



The mandrel wheel carries a series of parallel pairs of folding mandrels, each mandrel of a pair cooperating with a respective station, positioned 90° apart, having a folding chamber.

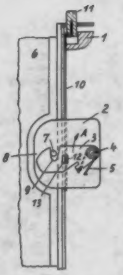
3,574,295
DEVICE FOR TAKING STEREOSCOPIC PHOTOGRAPH IN A STEREOSCOPIC MICROSCOPE
Toshio Tasaki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed June 20, 1969, Ser. No. 835,038
Claims priority, application Japan, June 29, 1968, 43/44,934
Int. Cl. G03b 35/08
U.S. Cl. 95—18 8 Claims

A device for taking stereoscopic photographs in a stereoscopic microscope having optical axes with a parallax angle formed therebetween for stereoscopic observation of the object. The device comprises a camera body loaded with a film and an optical path switching means rotatably mounted in the microscope so as to permit same to alternately assume first and second positions in which light

from the object is directed to the camera body from the two respective optical axes. A stereoscopic photograph is obtained by successively exposing the film at the first and second positions of the path switching means.

The camera body may comprise a pair of optical axes parallel to each other for simultaneously taking photographs of the object by the light coming from each of the two optical axes of the microscope.

3,574,296
CASSETTE FOR ROLLFILM CAMERAS
Claus Prochnow, and Kurt Bode, Braunschweig, Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed Sept. 23, 1968, Ser. No. 762,675
Claims priority, application Germany, Sept. 23, 1967, P 12 74 439.7
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 **8 Claims**

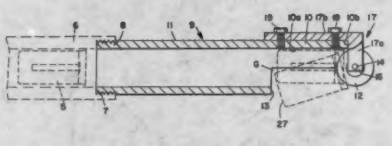


A rollfilm cassette for detachable mounting on the body portion of a camera. The cassette has a protective slide to be inserted in the cassette before removal from the camera, to prevent fogging of the film when the cassette is removed. An interlock responsive to the presence or absence of the protective slide prevents the release of the latch which unlatches the cassette from the camera body, unless the protective slide is properly inserted in the cassette. The cassette has a hollow backwall providing a chamber in which to keep the protective slide when the slide is removed from its protecting position so that exposures can be made on the film.

3,574,297
OFFSET PRINTING WITH ALKENYLSUCCINIC ACID COMPOUND
Keith B. Bozer, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 3, 1969, Ser. No. 804,001
Int. Cl. B41m *1/00, 3/00, 5/00*
U.S. Cl. 101—451 **5 Claims**

Paper characterized by insoluble basic surface properties is rendered selectively printing-ink receptive by application of alkenylsuccinic acid, its anhydride, or its soluble salt.

3,574,298
FIRING DEVICE, METHOD, AND SYSTEM, FOR SEISMIC EXPLORATION
Richard R. Larson, Ulster Park, N.Y., assignor to Hercules, Incorporated, Wilmington, Del.
Filed Apr. 21, 1969, Ser. No. 818,475
Int. Cl. F42d *3/06*
U.S. Cl. 102—22 **29 Claims**



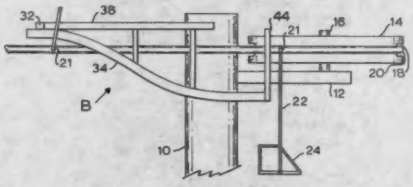
The invention provides:

1. a firing device for underwater seismic shooting small delay-type percussion-initiatable charge assemblies including (a) means for sequentially conveying such charge assemblies into, or along, a path of forward travel for percussion initiation, (b) means in said path of travel for interception-contact, while in a stationary position, with the forwardly moving charge assemblies to cause percussion initiation of same by resulting impact, and (c) means for directing the thus-initiated charge assemblies, during the delay period, from the system for subsequent detonation;

2. an underwater seismic exploration method including the steps of (a) sequentially conveying such delay-type charge assemblies into or along the above said path of travel, (b) sequentially impacting said assemblies during their travel to provide the percussion initiation, and (c) during the delay period, sequentially directing travel of the thus-initiated charge assemblies away from the zone of percussion initiation into an adjacent underwater area for detonation; and

3. a system for generating seismic disturbances in an underwater zone including (a) a movable platform, such as a boat deck, (b) a firing device, above described, as a submersed firing station, and (c) means for delivering such charge assemblies under force of fluid pressure from the boat deck to the firing station, including a delivery conduit and pressure generation means therefor.

3,574,299
CHAIR LIFT GUIDE
Robert A. Oswald, P.O. Box 458, Gardnerville, Nev. 89410
Filed Mar. 10, 1969, Ser. No. 805,697
Int. Cl. B61b *13/02*
U.S. Cl. 104—173 **6 Claims**

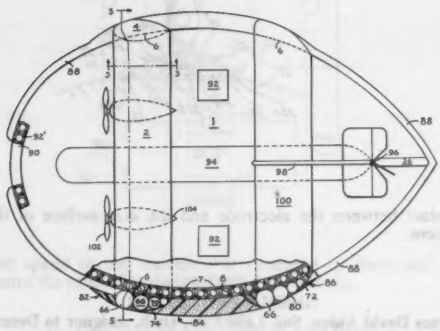


A stationary chair lift attachment for positively guiding successive chair supporting structures into predetermined alignment with a rotating bull wheel as the portion of a cable to which the chair supporting structure is attached approaches and is advanced tangentially around the bull wheel.

3,574,300
CRASH-RESISTANT, WATER-TRAVERSING, FLUIDFOIL VEHICLE

Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.

Filed Mar. 3, 1969, Ser. No. 803,672
Int. Cl. B63b 1/20
U.S. Cl. 114—66.5 15 Claims

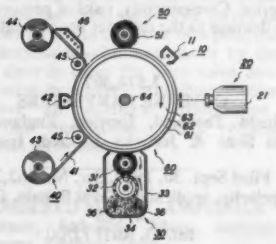


A wreck-resistant, lightweight vehicle, adapted to traverse water and optionally to travel also in air or space, comprising: a barrel-curved, preferably rigid-walled cabin; resilient fluid-dynamic foils or wings above and spaced from the cabin; fluid-dynamic foils below and spaced from the cabin (serving in travel thru water as hydrofoils that lift the cabin clear of the water's surface); resilient fluidfoil supports, strongly connecting the ends of each pair of the upper and lower fluidfoils, fitted and bonded to the vertical curves of the cabin sidewalls; and, optionally and preferably, vehicle-stabilizing balloon means, comprising a series of balloon bags in a streamlined skin, fitted between and bonded to the top of the cabin and each upper fluidfoil. The invention includes lightweight, strong, cabin-wall, endless ribs, comprising curved, thin-walled tubes that are strongly inflated with gaseous material and surrounded by integral, strong insulation which comprises substantially rigid foamed plastic, or very lightweight concrete, or similar material. The ribs are epoxy bonded together in a fore-and-aft series, and sheathed in a waterproofed skin.

3,574,301
DEVELOPING APPARATUS

John S. Bernhard, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,798
Int. Cl. G03g 13/08
U.S. Cl. 118—637 6 Claims

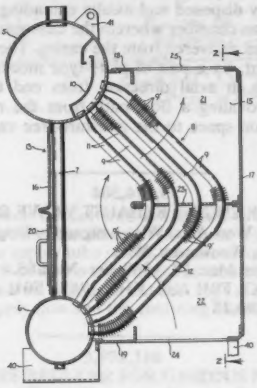


An apparatus for developing an electrostatic image on an insulating plate with toner particles including a brushlike developing member, means to generate a cloud of toner particles, a conductive donor member, and means to selectively place electrical biases on the donor member.

3,574,302
WASTE HEAT WATER TUBE BOILER

Denis G. Csathy, Minneapolis, Minn., assignor to Raygo, Inc., Minneapolis, Minn.

Filed Dec. 4, 1969, Ser. No. 882,196
Int. Cl. F22b 1/18
U.S. Cl. 122—7 6 Claims

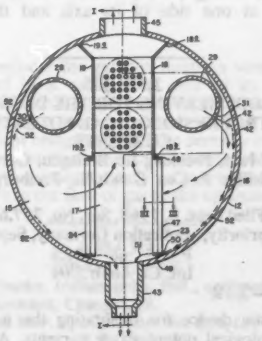


A water tube boiler with vertically spaced parallel steam and mud drums connected by vertical downcomer tubes and an angle shaped bank of heating tubes, the downcomer tubes and the angle shaped bank of heating tubes defining a triangle, and a boxlike casing enclosing all of the heating tubes with one upright wall thereof closely adjacent to the downcomer tubes and the opposite upright wall closely adjacent to the apex of the angle shaped bank and having a baffle wall joined thereto, which baffle wall bisects the angle defined by the bank of heating tubes but is spaced from the casing wall which is adjacent to the downcomer tubes, so that hot gases entering the casing at one side of the baffle wall and leaving the casing at the other side thereof must flow successively through the two angularly disposed legs of the bank of heating tubes.

3,574,303
MOISTURE SEPARATOR REHEATER FOR PRESSURIZED VAPOR

Thomas J. Rabas, Broomall, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1968, Ser. No. 763,885
Int. Cl. F22g 5/16; F22b 37/26
U.S. Cl. 122—483 16 Claims



This invention provides an improved unitary device for removing moisture from moisture-laden vapor in a highly

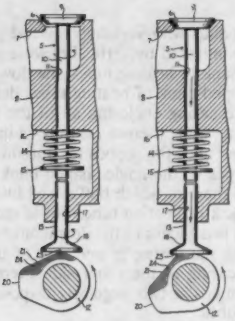
pressurized state and heating the demoisturized vapor to a dry and/or superheated state, in which an axially elongated casing (closed at its ends) is divided into a pair of oppositely disposed and axially extending moisture-laden vapor collection chambers into which the incoming moisture-laden vapor (such as motive steam for a steam turbine) is individually distributed in a uniform manner by a longitudinally elongated manifold disposed in each chamber, and a centrally disposed and axially extending moisture-free vapor collection chamber wherein the demoisturized vapor is heated and then delivered from the casing. The chambers are defined, in part, by a pair of plate-type moisture separators also extending in axial direction from end to end of the casing and providing a flow path from the moisture-laden vapor collection space to the moisture-free vapor collection chamber.

3,574,304

GASOLINE ENGINE EXHAUST VALVE ROTATOR

John D. Santi, West Allis, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 10, 1969, Ser. No. 805,416
Int. Cl. F01l *1/32*; **F16k** *29/00*; **F01l** *1/08*
U.S. Cl. 123—90.28 **3 Claims**



The cam for the exhaust valve has a small lobe that momentarily interrupts closing motion of the valve just before it seats, so that the valve slips rotationally relative to its spring under rotational inertia built up during the preceding part of closing motion and induced by rotation of the moving end of the spring. The profiled cam surface is recessed in the neighborhood of said lobe to engage the tappet only at one side of its axis and thus encourage rotation.

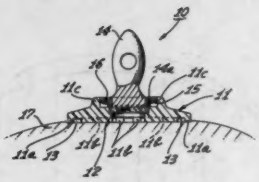
3,574,305

ELECTRODE SERVING FOR THE DETECTION OF ELECTROPHYSIOLOGICAL POTENTIALS OR CURRENTS

Gerhard L. Muhl, Freiburg Im Breisgau, Germany, assignor to Fritz Hellige & Co., G.m.b.H., Freiburg im Breisgau, Germany

Filed Sept. 5, 1968, Ser. No. 757,619
Claims priority, application Germany, Sept. 9, 1967, P 15 66 089.6
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1R **7 Claims**

A diagnostic device for facilitating the measurement of electrophysiological potentials or currents. An electrode of sintered construction and of disc configuration is retained within a holding member of the diagnostic device. The electrode is a mixture of silver powder and silver salt at defined ratios, and the silver salt being within a preferred solubility level. The holding member has a plurality of radial ribs adapted to provide free space wherein an electrolytically conductive paste may be placed so as to prevent direct



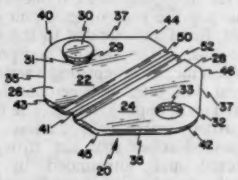
contact between the electrode and the skin surface of the patient.

3,574,306

NEEDLE PROTECTOR

James David Alden, Salt Lake City, Utah, assignor to Deseret Pharmaceutical Company, Inc.

Filed Jan. 13, 1969, Ser. No. 790,703
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **2 Claims**



A needle protector defining a unitary entirely planar needle cover including planar wings of essentially uniform thickness molded with a reduced thickness bisecting fold line, each wing containing a semicylindrical parallel groove for circumscribing and binding against a needle which circumscribes an indwelling catheter tube, the sharpened tip of the needle being confined between the wings within the parallel grooves when the protector is folded together and permanently fastened in the folded position by a male-female union whereby the folded protector defines a continuously smooth exterior. Consequently, risks of personal injury to the patient and damage to the catheter are alleviated.

3,574,307

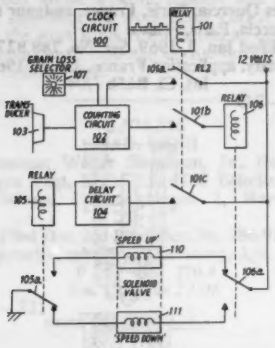
COMBINE HARVESTERS

Peter Reginald Theobald, Ipswich, England, assignor to Ransomes Sims & Jefferies Limited, Ipswich, Suffolk,, England

Filed Sept. 30, 1969, Ser. No. 862,366
Claims priority, application Great Britain, Oct. 4, 1968, 47145
Int. Cl. A01f *12/00*
U.S. Cl. 130—24 **7 Claims**

Apparatus for controlling the forward speed of a combine harvester in dependence upon grain loss at a selected location in the harvester comprises an electronic clock circuit, a delay circuit and a counting circuit, the latter having transducer means which provide pulses representative of a measure of grain loss and the arrangement being such

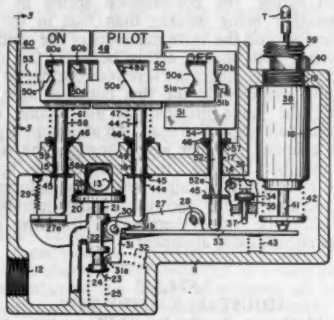
that at a predetermined time in each clock pulse, if the counting level is other than a predetermined value the forward speed of the harvester is increased or decreased to control the level of grain loss from the harvester.



3,574,308
MANUALLY RESET SAFETY CONTROL

Robert J. Battersby, Lomita, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 7, 1969, Ser. No. 805,162
Int. Cl. F23d 13/46
U.S. Cl. 137—66 7 Claims



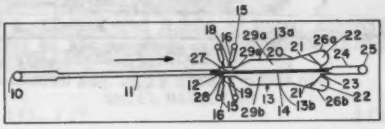
A 100 percent safety shutoff gas valve comprising a biased closed main valve, a biased closed pilot valve, a thermoelectric power unit for holding the valves open but incapable of opening them and a plurality of pushbutton actuators that are sequentially actuated to first open the pilot valve and reset the power unit for energization by a pilot burner heated thermocouple and, thereafter, actuate another pushbutton to open the main valve. The valves are adapted to be closed either by the occurrence of a pilot burner flame failure, which deenergizes the magnet, or by depressing a third button to directly close the pilot valve and indirectly close the main valve by tripping a latching mechanism. The pushbuttons have an interlock arrangement whereby depressing of one pushbutton causes retraction of a previously actuated pushbutton.

3,574,309
CHAMBERED FLUIDIC AMPLIFIER

Hans-Dieter Kinner, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation-in-part of application Ser. No. 662,273, Aug. 18, 1967, now abandoned. This application June 28, 1968, Ser. No. 741,018
Int. Cl. F15c 1/18
U.S. Cl. 137—81.5 3 Claims

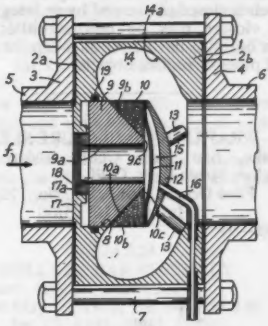
A supply tube projects fluid flow into a chamber closely surrounding but not contacting the projected flow in its laminar state; the chamber has at least one wall narrowly spaced from the path of the projected laminar supply stream, and at least one wall sufficiently spaced from this path to permit reverse circulation in the chamber; the application of a control flow transversely against the projected laminar flow causes a disruption thereof with interaction of the projected disrupted flow with the chamber walls; a receiver axially aligned with the supply tube senses the effects of control flow upon the supply flow, the switching between controlled and uncontrolled states being enhanced by the interaction between the supply flow and the confining chamber.



3,574,310
PRESSURE REDUCER FOR GASEOUS FLUIDS

Daniel S. Souriau, Paris, France, assignor to Service National dit: Gaz De France, Paris, France

Filed Oct. 21, 1969, Ser. No. 868,171
Claims priority, application France, Oct. 23, 1968, 171014
Int. Cl. F16k 7/17
U.S. Cl. 137—625.3 9 Claims



A pressure reducer for gaseous fluids in which a porous body is located in a casing with one of its surfaces in fluidtight contact with a support member. The porosity of the member in a direction joining the upstream and of said body to said one surface being large and the porosity in a direction between said one surface and the downstream end of the body being poor. A pneumatically or hydraulically operated membrane controls the flow of gas to the upstream end.

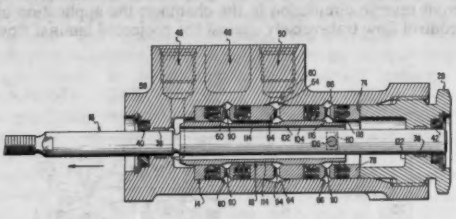
3,574,311
SPOOL VALVE

Gordon J. Fairbanks, Indianapolis, Ind., assignor to Stewart Warner Corporation, Chicago, Ill.

Filed Mar. 5, 1969, Ser. No. 804,417
Int. Cl. F16k 11/07
U.S. Cl. 137—625.68 3 Claims

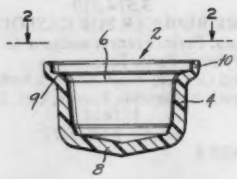
A spool valve in the form of a hollow cylinder of larger internal diameter than that of the operating shaft receiving

the same, floats on one or more pins extending radially from the shaft periphery to allow the floating spool to be self-



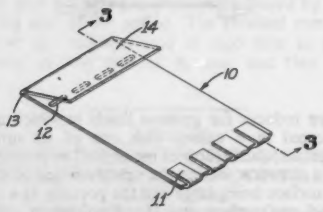
centered with respect to the cylindrical valve casing encircling the same.

3,574,312
CLOSURE
Joseph T. Miller, St. Louis, Mo., assignor to Sinclair & Rush Inc., St. Louis, Mo.
Filed Feb. 25, 1969, Ser. No. 802,131
Int. Cl. F16l *57/00*; **B65d** *59/06*
U.S. Cl. 138—96 **1 Claim**



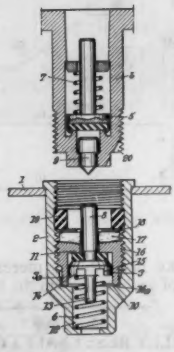
A closure formed from a material of relatively high flexibility and elasticity and having a sidewall defining a socket which is closed at one end by an integrally formed end wall. The closure may be utilized either as a plug for insertion in bores or cavities or as a cap for installation over the ends of pipes or rodlike objects.

3,574,313
WRAPAROUND CLOSURE SLEEVE
Ken Tanaka, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed Oct. 30, 1968, Ser. No. 771,818
Int. Cl. F16l *25/00*
U.S. Cl. 138—99 **7 Claims**



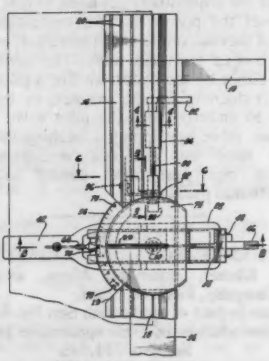
A closure sleeve for pipes or the like constructed from a piece of independently dimensionally heat unstable material, that is, material which will return to its original shape and dimensions upon application of heat alone. The sleeve is split and provided along one edge with a plurality of preshrunk tabs which are folded back over the sleeve. A plurality of corresponding slots are formed adjacent the other edge of the sleeve and the material of the other edge folded back over the slots. To install the closure member, the piece of material is roller into tubular form and the tabs inserted into the slots and the part then heat recovered.

3,574,314
COUPLING FOR CONNECTING A RECHARGEABLE RESERVOIR WITH A PRESSURISED RECHARGING TANK
Roger Charles Quercia, Paris, France, assignor to Flaminaire Marcel Quercia, Paris, France
Filed Jan. 3, 1969, Ser. No. 788,827
Claims priority, application France, Jan. 9, 1968, 135,392
Int. Cl. B65b *1/04*
U.S. Cl. 141—349 **1 Claim**



A coupling for connecting a gas lighter reservoir to a high-pressure refill tank comprises a first coupling member fitted to the lighter reservoir and providing a screw-threaded socket to receive a screw-threaded spigot on a second coupling member of the refill tank. Both coupling members have check valves urged into their closed positions by a compression spring, the compression spring in the first coupling member being weaker than that in the second coupling member and the valve members of the check valves being provided with means acting between the members when the coupling members are screwed together to displace the first valve member, in the first coupling member and subsequently the valve member in the second coupling member from their respective seats. An abutment is provided in the first coupling member which engages the respective coupling member before its compression spring is compressed sufficiently to cause permanent deformation to the valve member in the second coupling member being displaced after the valve member in the first coupling member has engaged said abutment.

3,574,315
ADJUSTABLE MITRE SAW
Ace C. Boultinghouse, Northridge, Calif., assignor to B & E Products Inc., Los Angeles, Calif.
Filed Nov. 4, 1968, Ser. No. 773,123
Int. Cl. B27b *5/20*
U.S. Cl. 143—6 **4 Claims**



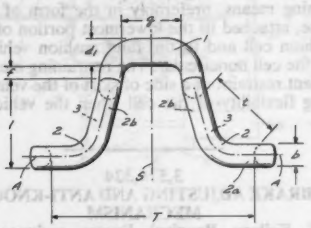
A power-driven saw is described which performs mitre cuts and which is adjustable to the angle of cut desired. A

turntable is included in which the power-driven saw is pivotally mounted thereto by a spindle. A counterbalance arm is pivoted above a work support and is capable of clearing the saw from the work being cut. A brake shoe is mounted on the work support which can be engaged to press upon a circular flange mounted on the turntable for locking the saw at a desired angle.

3,574,316
MAIL MESH

Walter Siepmann; Walter Siepmann, Jr., Haus Mohnetal; Hans-Jurgen Vogt, Kulbe 21, 4785 Belecke, Mohne, and Herbert Sobota, Unterm Hagen 2, Warstein, Sauerl, Germany

Filed Dec. 26, 1968, Ser. No. 786,922
Claims priority, application Germany, Apr. 19, 1968, P 17 55 270.4
Int. Cl. B60c *27/06*
U.S. Cl. 152—231 **18 Claims**

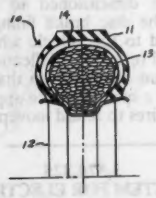


A protective mail mesh, which is particularly suitable for protecting vehicle tires, comprises a plurality of one-piece members each having at least two closed loop portions and a connecting portion connecting the same. Each loop portion has an opening which is so dimensioned as to permit sliding insertion of a loop portion of another of the members only when the loop portions of the respective members have a predetermined orientation with reference to one another. Each loop portion has two integral sections one of which is closer to and the other of which is farther from the associated connecting portion and the general planes of at least the other sections of the loop portions are at least substantially coincident with one another. Each connecting portion of each of the members extends through and is at least in part slidably accommodated in a loop portion of at least one other of the members whereby all of them are connected movable with reference to each other and together constitute a mail mesh.

3,574,317
PUNCTUREPROOF PNEUMATIC TIRE

Howell K. Brewer, Fairborn, Ohio (333 N. Longview St., Dayton, Ohio 45432)

Filed Apr. 18, 1969, Ser. No. 817,502
Int. Cl. B60c *17/00*
U.S. Cl. 152—313 **6 Claims**

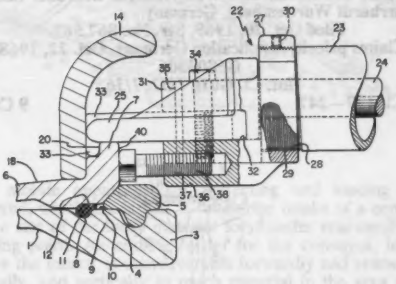


A punctureproof tubeless, or tube-type pneumatic tire equipped with a series of resilient sacs inflated with gas under pressure, and consisting of individually sealed sac elements fabricated with thin elastic or plastic sheet material conformable with the inner casing and/or tube structure. This sac element arrangement is placed in the usual main compressed gas space of the tire casing, or inner tube and automatically resists any deformation of the casing resulting from a puncture thereof.

3,574,318
WHEEL RIM AND TIRE-BEAD-LOOSENING TOOL THEREFOR

Gerhart L. Gerbeth, and Harold A. Bunts, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1969, Ser. No. 851,684
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.17 **4 Claims**



A tire-bead-loosening tool in combination with a wheel rim having a specially designed offset on the side ring retaining flange for receiving attachment hooks of the loosening tool.

3,574,319
PARAFFIN CONTROL METHOD

Charles E. Morgenthaler, Casper, Wyo., assignor to Tenneco Oil Company, Houston, Tex.

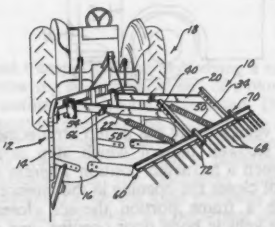
Filed Dec. 30, 1969, Ser. No. 889,327
Int. Cl. E21b *43/00, 43/28*
U.S. Cl. 166—304 **8 Claims**

A method for controlling paraffin deposition in an oil production system and includes injecting an asphaltic crude oil into paraffin base crude oil production and storage facilities. The invention includes the steps of mixing the asphaltic crude oil with the paraffin base crude oil and producing the paraffin base oil to the surface.

3,574,320
MULCHER BAR ASSEMBLY

Donald F. Sigmund, Anamosa, Iowa 52205

Filed May 15, 1969, Ser. No. 824,846
Int. Cl. A01b *49/02, 23/04*
U.S. Cl. 172—202 **7 Claims**



A mulcher bar assembly adapted for use with a plow and designed to trail the plow to mulch the freshly turned soil. A first pair of spaced apart arms are adjustably secured to the main plow beam and extend rearwardly and laterally therefrom. A second pair of spring loaded arms are pivotally

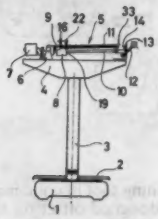
and vertically adjustably secured at their upper ends to a first pair of arms and extend downwardly therefrom. A horizontal bar means is adjustably secured to the lower ends of the second pair of arms and has a plurality of spaced apart teeth extending downwardly therefrom. The spring loaded arms yieldably urge the teeth into the soil to mulch the soil as the plow is moved in the field. The second pair of arms, bar and teeth may pivot upwardly and rearwardly as a unit if a foreign object is struck by the teeth to prevent damage to the assembly and plow.

3,574,321

SLIDING WEIGHT SCALE FOR DIFFERENT WEIGHT UNITS

Richard Scheerer, Murrhardt Wurttemberg, Germany, assignor to Murrhardter Waagenfabrik Gebruder Soehnle, Murrhardt Wurttemberg, Germany

Filed Oct. 20, 1969, Ser. No. 867,562
Claims priority, application Germany, Oct. 22, 1968, G6803306
Int. Cl. G01g *1/32, 1/36*
U.S. Cl. 177—247 **9 Claims**



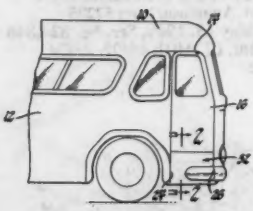
A platform scale has a balance beam with at least two graduated scales having different units of weight. A weight is slidable along two graduated scales and carries two arresting teeth whose relative position can be adjusted so that only one arresting tooth cooperates at any time with recesses of a scale beam having the selected graduated scale.

3,574,322

TWO-POSITION STEP FOR BUSES

Richard H. Hancock, Orchard Lake, and Dale O. Hargraves, Drayton Plains, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1969, Ser. No. 860,945
Int. Cl. B60v *3/02*
U.S. Cl. 180—102 **3 Claims**



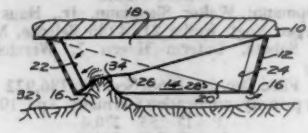
A bus-type vehicle body has a step arrangement mounted in the door stepwell thereof which step arrangement is movable between a retracted position wherein a step panel portion thereof closes the opening in the interior floor to the stepwell while a frame portion thereof closes the lower portion of the vehicle body door opening, and an extended position wherein the step panel provides a step between ground level and the interior floor level. The step panel portion is arranged to invert its surfaces when moving between its interior floor closing position and its step forming position and a pressure sensitive switch pad on the step panel moves therewith between exposed and concealed positions during the inversion.

3,574,323

SKIRT CONTROLLERS FOR FLUID CUSHIONS VEHICLES

William F. Shiflet, Rancho Cordova, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Mar. 19, 1969, Ser. No. 808,449
Int. Cl. B60v *1/16*
U.S. Cl. 180—127 **5 Claims**



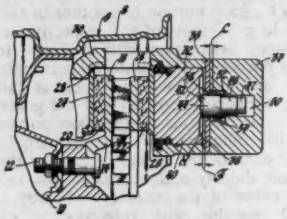
A controller according to the present disclosure comprises a restraining means, preferably in the form of a triangular membrane, attached to the lowermost portion of a skirt or a fluid cushion cell and to the fluid cushion vehicle so as to maintain the cell noncircular. The restraining means provides independent restraint of a side of skirt of the vehicle, thereby permitting flexibility of the cell when the vehicle traverses obstacles.

3,574,324

DISC BRAKE ADJUSTING AND ANTI-KNOCKBACK MECHANISM

George E. Kellogg, Bougival, France, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1969, Ser. No. 805,191
Int. Cl. F16d *65/54*
U.S. Cl. 188—71.8 **2 Claims**



A disc brake apply piston slidably disposed within a caliper supported cylinder wherein the piston comprises an axially extending extension disposed within a stepped bore of a cap member enclosing one end of the cylinder. The extension also is stepped in form and has a spring member coiled therearound on a major diameter such that wear of the brake linings causes coils of the spring from the major diameter to move onto a portion of a lesser diameter where these coils engage the stepped abutment in the cylinder wall thereby limiting movement of the piston away from the brake disc. This arrangement is dimensioned to provide a specific clearance between the disc brake linings and the rotating braking disc attached to the vehicle wheel. In this manner brake lining wear and brake disc deflection are compensated maintaining a constant clearance so that movement of the brake pedal provides a specific brake applying pressure each time the operator desires to retard movement of the vehicle.

3,574,325

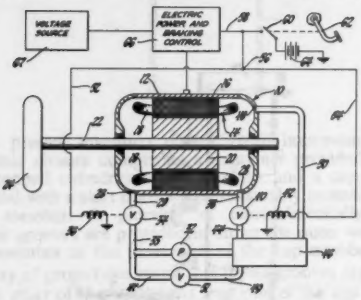
BRAKING SYSTEM FOR ELECTRIC MOTORS

Paul D. Agarwal, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1969, Ser. No. 800,621
Int. Cl. F16d *65/36*
U.S. Cl. 188—156 **6 Claims**

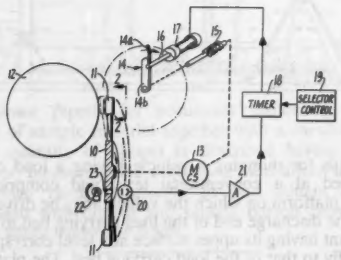
A braking system for electric motors and particularly a braking system for braking an induction motor which is

utilized to propel a vehicle. The braking system utilizes combined hydraulic and electric braking where the interior of the electric motor is flooded with a fluid cooling medium such as oil at the same time that the motor is connected in an electric braking mode of operation. The cooling oil which is supplied to the interior of the motor provides a viscous drag on the rotor of the motor since it fills the air gap of the motor and, therefore, impedes rotation of the motor rotor. The electric braking, which takes place at the same time as the hydraulic braking, can be performed by a braking operation



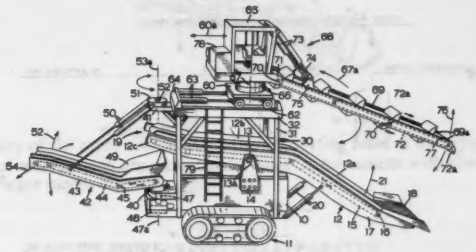
where the stator winding is connected with a source of direct current or can be performed by a plugging operation where two of the input leads to a polyphase motor have their connections to a source of alternating current reversed. During the electric braking heat is generated in the rotor of the motor and the cooling oil performs the function of a hydraulic retarder as well as cooling the rotor during the time that the motor is operating in a braking mode. The invention is particularly useful in braking electrically powered vehicles for extended periods of time where the vehicle is propelled by an electric motor.

3,574,326
ACTUATING MECHANISM FOR ROTATING PRINTING DISC
Ralph Koehn, San Francisco, Calif., assignor to Donald F. Flynn, San Francisco, Calif.
Filed Mar. 26, 1968, Ser. No. 716,088
Int. Cl. B41j *1/24*
U.S. Cl. 197—49 **6 Claims**



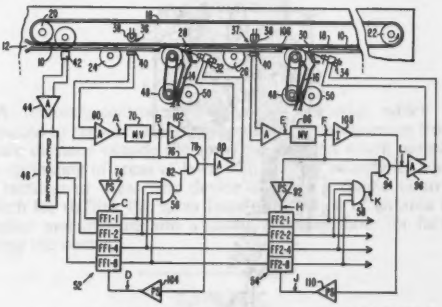
Apparatus for selectively actuating one of a plurality of character pads on a continuously rotating disc, comprising a rotary hammer mounted with respect to the disc for momentarily engaging, centering and actuating a selected character pad at a printing position adjacent to a platen.

3,574,327
LOADER
Michele Golfi, 149 Simcoe St. East, Hamilton, Ontario, Canada
Filed Mar. 21, 1969, Ser. No. 809,198
Int. Cl. B65g *65/06*
U.S. Cl. 198—8 **2 Claims**



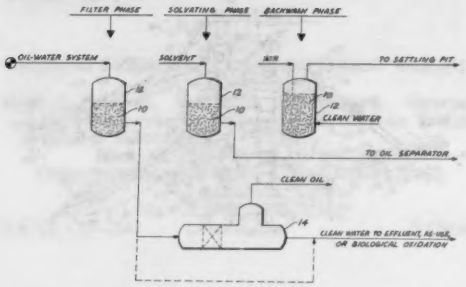
A mobile apparatus, for collecting and loading loose material, which is adapted to locate the intake of a conveyor at the site of the loose material for transfer rearwardly to a loading point. An endless feeder for the conveyor, located above the intake, is maneuverable forwardly and rearwardly, laterally, and vertically to reach material in the area of the conveyor intake.

3,574,328
DOCUMENT TRANSPORT SYSTEM
William E. Holmes, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Apr. 17, 1969, Ser. No. 816,912
Int. Cl. B07c *5/344*
U.S. Cl. 209—74 **3 Claims**



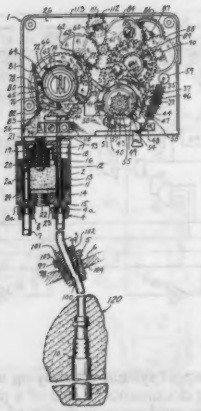
A document transport system embodying a main guideway for singly conveying documents to one of a plurality of gated intersecting auxiliary guideways is disclosed. The destination of the document is read from the document by a reader such as a magnetic reading head. This information is then synchronously transferred through a plurality of registers with the movement of the document along the main guideway. Positioned along the main guideway and anteriorly to each intersecting guideway is a document detector having the functions of transferring the information from the previous register to the present register and actuate the gate to the auxiliary guideway if there is a verification between the destination information in the register and the gate identification. Several documents having different destinations may be transported along the main guideway at any one time.

3,574,329
PROCESS FOR PURIFYING WATER CONTAINING OIL AND SOLIDS
David K. Beavon, Long Beach, Calif. (702 S. Serrano #12 Los Angeles, Calif. 90005)
Filed Sept. 29, 1969, Ser. No. 861,633
Int. Cl. B01d *23/24*
U.S. Cl. 210—80 10 Claims



Water containing oil and particulate solids, typically oil-wet solids, is filtered through a filter media, such as a sand, to retain particulate solids thereby yielding clear water or a mixture of solids-free oil and water, which will readily separate by gravity. The filter media is periodically regenerated by steam stripping to remove retained oil, then backwashed to remove oil-free particulate solids.

3,574,330
SENSOR CONTROL
David G. Prosser, Milwaukee, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.
Filed Apr. 23, 1969, Ser. No. 818,763
Int. Cl. B01d *15/04*
U.S. Cl. 210—96 2 Claims

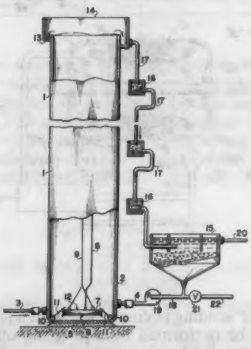


A water softener sensor control transmits the output of a motor in response to hardness of periodic water samples. The motor drives a timing gear that periodically actuates a control assembly to slide a cam member to open a valve in a resin containing chamber to admit a water sample, and to drop a plunger on the resin to detect its volume. If the water is hard, the resin shrinks and a latch on the plunger actuates an output assembly driven through a gear train by the motor to rotate an output shaft. This control also includes means for varying the level from which water samples are taken, and several novel mechanisms disclosed in detail.

ERRATUM

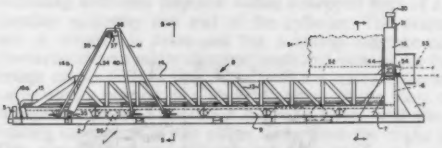
For Class 210—107 see:
Patent No. 3,574,509

3,574,331
AERATION TANK FOR WASTE TREATMENT
Keiji Kurosawa, Kamakura, and Makio Nakashio, Yokohama, Japan, assignors to Mitsubishi Kakoki Kaisha Ltd, Tokyo, Japan
Filed July 15, 1969, Ser. No. 841,792
Claims priority, application Japan, Dec. 18, 1968, 43/92285
Int. Cl. C02c *1/12*
U.S. Cl. 210—195 7 Claims



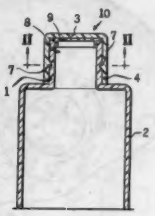
The aeration tank in a plant for waste treatment by means of activated sludge is about 30 meters high and slender, and waste and oxygen-bearing gas are supplied to the bottom of the tank at the prevailing hydrostatic pressure of more than 40 p.s.i.g., thereby accelerating oxygen absorption by the mainly aqueous waste material and increasing the processing capacity of the tank over shallower tanks of equal volume.

3,574,332
TRAILER LIFTING AND DUMPING APPARATUS
Clifford C. Wetzel, Rte #1, Ithaca, Mich. 48847
Filed June 9, 1969, Ser. No. 831,568
Int. Cl. B65g *67/36*
U.S. Cl. 214—49 16 Claims



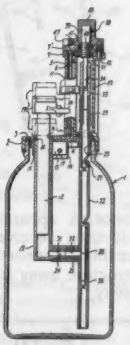
Apparatus for dumping a vehicle having a load carrying bed located at a conventional level and comprising an elongated platform on which the vehicle may be driven so as to cause the discharge end of the load carrying bed to engage an abutment having its upper surface at a level corresponding substantially to that of the load carrying bed. The platform is pivoted to rock about an axis at a level corresponding to that of the load carrying bed, thereby enabling the contents of the vehicle to be discharged onto a conveyor or the like without falling from the height at which the load carrying bed is located. The platform preferably includes a vertically adjustable gate to provide a variable size throat through which the vehicle's contents must pass, thereby affording means for regulating the rate of discharge of the vehicle's contents.

3,574,333
CONTAINER CLOSURE
Hisaaki Ohara, 124 Ukita-cho, Kita-ku, Osaka, Japan
Filed May 19, 1969, Ser. No. 825,555
Int. Cl. B65d 41/22
U.S. Cl. 215—41 4 Claims



The present invention relates to an improvement of a container closure comprising a container provided with an open-topped cylindrical neck member and a cap member provided with a skirt portion and removably mounted on the neck member. A plurality of circumferentially spaced annular grooves are provided in either the outer wall of the neck member or the inner wall of the cap member, and a plurality of projections receivable in the grooves are formed on the other of these walls. At least one of the cap member and the container is made of relatively elastic material.

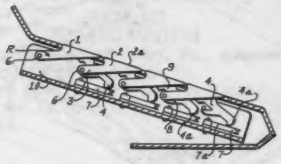
3,574,334
DILUTOR PIPETTE
William J. Roach, San Mateo, Calif., assignor to Oxford Laboratories,, San Mateo, Calif.
Continuation-in-part of application Ser. No. 687,372, Dec. 1, 1967, now Patent No. 3,452,901, dated July 1, 1969. This application Feb. 10, 1969, Ser. No. 798,006
Int. Cl. B67d 5/40
U.S. Cl. 222—385 3 Claims



A dilutor pipette for accurately dispensing a precise amount of sample material together with a variable selected precise quantity of diluent is described having a diluent container, measuring and dispensing mechanism and a sample syringe barrel connected to said diluent dispensing mechanism with diluent and sample barrels provided with annular sharp transverse edges.

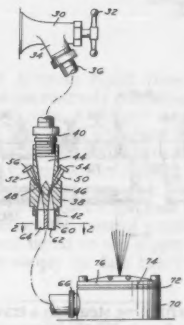
3,574,335
KEYBOARD WITH INTERCONNECTED KEYS
Heinz Ricke, Braunschweig, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany
Filed Nov. 26, 1969, Ser. No. 880,230
Int. Cl. G06c 7/02; B41j 5/08
U.S. Cl. 235—145 16 Claims

Integral keys including a finger piece, a connecting arm and a support arm are arranged in lines and column rows in a keyboard. The support arm of each key has a guide opening for guiding the connecting arm of the preceding key, and is located under the finger piece of the respective preceding



key of the same column row. The supporting arms of all keys of several lines are mounted for angular movement with the finger pieces about parallel shafts.

3,574,336
LAWN SPRINKLING APPARATUS
Peter C. Epple, Detroit, Mich., assignor to William P. Kramer, Royal Oak, Mich., a fractional part interest
Filed Dec. 26, 1968, Ser. No. 786,874
Int. Cl. B05b 1/08
U.S. Cl. 239—101 20 Claims

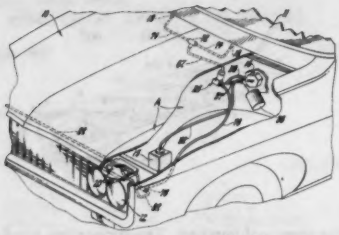


A remotely-controlled lawn water sprinkler which is designed to provide an infinite spray pattern adjustment from a safe distance outside the spray pattern and which permits the sprinkling of areas of lawn with defined boundaries such as rectangular areas, the device utilizing a fluidic control switch for shifting the spray from one portion of an area to another and utilizing also a multiple passage hose for facilitating the control.

3,574,337
WINDSHIELD AND HEADLAMP WASHER SYSTEM
Ralph W. Edwards, Bellbrook, and Harry Kronson, Jr., Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed June 17, 1969, Ser. No. 834,042
Int. Cl. B05b 1/10
U.S. Cl. 239—284 3 Claims

In a preferred form, a washer system for supplying washer fluid under pressure to either a windshield or a plurality of headlamps of an automotive vehicle is disclosed. The washer system includes a source of washer fluid, a washer pump in communication with the source for delivering washer fluid under pressure, when energized, a diverter valve mechanism having inlet means in communication with the washer pump and first and second outlet means, and windshield and headlamp nozzles adapted to be positioned adjacent the windshield and the headlamps and in communication with the first and second outlet means of the diverter valve mechanism, respectively. The diverter valve mechanism

includes a solenoid operated valve member having a normal position in which it directs the washer fluid toward the



windshield nozzles and a retracted position, when energized by a manual control means operated by the operator of the vehicle, in which it directs the washer fluid to the headlamp nozzles of the vehicle.

3,574,338

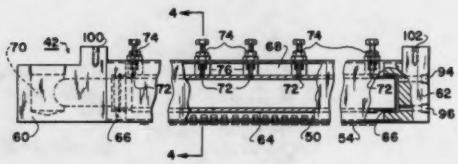
STEAM DISTRIBUTION SYSTEM

Clifford D. Shelor, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,615

Int. Cl. B05b *1/14*

U.S. Cl. 239—553.3 **13 Claims**



A system for distributing steam to a travelling web includes an elongated chamber having numerous steam distribution outlets arranged therealong and a steam inlet manifold extending lengthwise along the interior of the chamber. A plurality of ports formed along the manifold serve to admit steam from the manifold to the chamber. A system of manually adjustable valves individually controls the amount of fluid passing through each port from the manifold into the chamber to thereby enable an operator to selectively establish various profiles of steam distribution. In a preferred embodiment the system is located above the web. The steam distribution outlets are directed downwardly and each is surrounded on the interior of the chamber by an upstanding ferrule which prevents condensation from passing from the chamber onto the web.

3,574,339

BRAKE ADJUSTING MEANS FOR FLY REELS

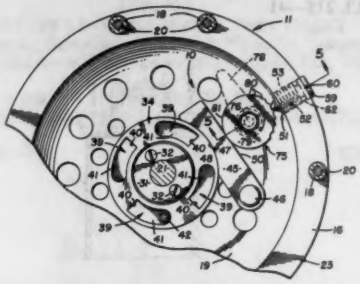
Thomas F. Sarah, Akron, Ohio, assignor to Shakespeare of Arkansas Inc., Fayetteville, Ark.

Filed Nov. 1, 1968, Ser. No. 772,558

Int. Cl. A01k *89/02*

U.S. Cl. 242—84.5 **8 Claims**

A fly reel has a line spool rotatably mounted within a housing. A brake means to resist rotation of the spool in at least one direction employs a drum rotatable with the spool in at least that direction in which rotational resistance is desired. A shoe means incorporated on a brake arm supported from the housing frictionally engages the drum and an adjusting means selectively varies the pressure with which the shoe engages the drum. The adjusting means comprises a wedge means that transmits pressure force from a thrust means to a reaction surface on the side of the brake arm opposite the shoe means. A control means varies the span of the wedge means between the thrust means and the



reaction surface and thereby the pressure force applied by the shoe means against the drum.

3,574,340

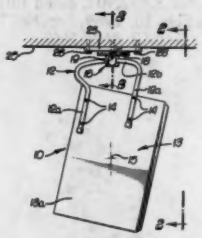
TELEVISION RECEIVER ADJUSTABLE TILT SUSPENSION

Kenneth A. Busche, 18728 Prairie St., Northridge, Calif.

Filed Feb. 27, 1969, Ser. No. 802,843

Int. Cl. A47f *5/01*; A47b *81/06*

U.S. Cl. 248—285 **11 Claims**



The disclosure concerns apparatus for hanging heavy devices, such as television receivers, with provision for adjustable tilt, and enabling connection of the apparatus to the receiver frame structure away from an axis through the receiver center of gravity.

3,574,341

VALVE CLOSURE FOR LADLES AND THE LIKE

Hans Reinhard Fehling, Zug, Switzerland; Hans-Joachim Winkler, Krefeld-Uerdingen, and Karl Modler, Krefeld-Linn, Germany, assignors to Didier-Werke A. G., Wiesbaden, Germany

Filed Dec. 26, 1968, Ser. No. 786,980

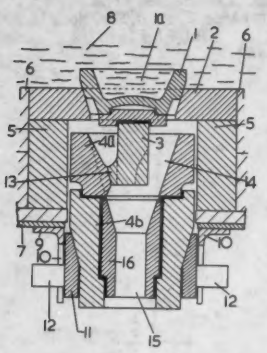
Claims priority, application Great Britain, Dec. 30, 1967, 59289/67

Int. Cl. F16k *1/00*; F27d *3/14*

U.S. Cl. 251—319 **6 Claims**

In a valve closure assembly for controlling the discharge of molten material from the base of a container (e.g. the discharge of molten steel from a casting ladle) in which the flow takes place downwards through a valve seat controlled by an axially-movable valve head, the valve head is supported on a movable support member which is disposed in a flow passage through a valve body and is supported from the latter by a plurality of circumferentially-spaced struts. The valve body is movable upwards, to open the valve, by raising the

valve head through the mechanism of the support member and the downward flow from the valve seat is divided by the



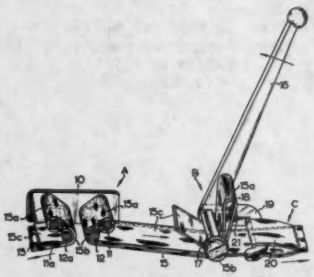
struts in the flow passage into a plurality of streams passing the support member.

3,574,342

APPARATUS FOR CONNECTING, TIGHTENING, SECURING AND RELEASING OF BELTS

Harald Berns, Wuppertal-Elberfeld, Germany, assignor to Firma Herbert Schlbach, Schmalwebereien, Wuppertal-Barmen, Germany

Filed May 29, 1969, Ser. No. 828,880
Claims priority, application Germany, June 1, 1968, P 17 56 530.9
Int. Cl. B66f *3/00*
U.S. Cl. 254—79 **7 Claims**



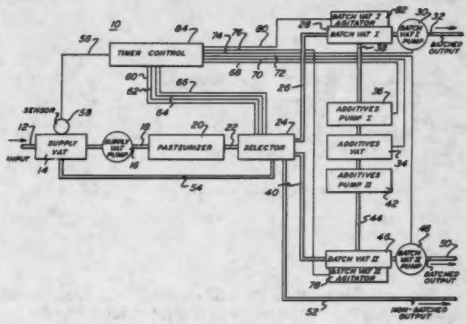
An apparatus for connecting, tightening, securing and releasing of belts, which comprises a tension lock and a swingable tension lever. A locking pin and a deviation pin are disposed spaced apart and behind each other on the tension lever for locking and deviating of a belt, and for winding the tension side of the belt about the deviation pin with formation of a substantially U-shaped single belt loop in one layer and for laying over itself partly surrounding the locking pin in two layers for support on the locking pin with formation of a double belt loop, while the securing side of the belt is secured to the tension lock, the tension lock is structurally separated from the tension lever and disposed along parallel axes and set off as to the height as well as disposed behind each other. Side cheek members receive at least one of the locking pins and one of the deviation pins. At least one of the pins is formed as a rotatable roller, in order to wind the tension side of the belt in a single belt loop, about the deviation bolt, as well as the superposed belt sections of the single loop in a double belt loop about the locking bolt with formation of a belt self-locking securing system, the belt part surrounding the load as well as the free tension end of the belt disposed substantially parallel to a plane extending through the bolt axes of the tension lock, a counter-bearing is provided for a hooklike support of a support hook pivotally connected to the tension lever. The support hook is releasably engageable with the free tension and of the belt, and the counter-bearing includes a belt part wound about the load.

3,574,343

MIXING SYSTEM

Joel L. Cutler, Huntingdon Valley, Pa., assignor to Cutler Davis Products, Inc., Philadelphia, Pa.

Filed June 25, 1969, Ser. No. 836,347
Int. Cl. B01f *5/00, 7/00, 15/02*
U.S. Cl. 259—18 **11 Claims**



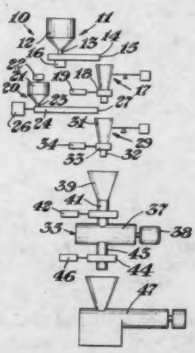
A mixing system wherein liquid from a supply vat is pasteurized and then successively combined with additives in first and second batch vats. A control mechanism operating on a predetermined time basis is utilized to switch from one vat to the other when one vat is filled, to introduce additives into the vat, to mix the pasteurized liquid and the additives with an agitator, and to evacuate the filled vat while the other vat is being filled in order to prepare for the next cycle of operation. In addition, the control mechanism diverts the unbatched pasteurized liquid to the supply vat in the event that the liquid in the supply vat falls below a predetermined level.

3,574,344

BLENDING OF PARTICULATE MATERIALS IN PREDETERMINED QUANTITIES

Theodore C. Wallace, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

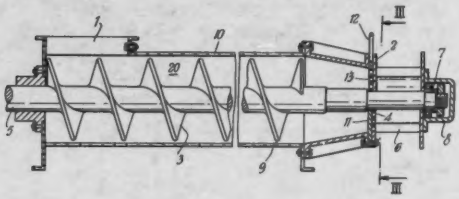
Filed July 7, 1969, Ser. No. 839,416
Int. Cl. B01f *5/00*
U.S. Cl. 259—18 **7 Claims**



Pigments in a polymer particle are blended in predetermined quantities employing two weighing hoppers.

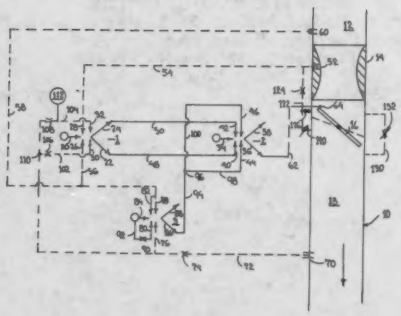
The hopper weighing the larger particle size material is discharged through the hopper weighing the smaller particle size material, thereby eliminating "hangup" or adherence of the finer material to the weighing hopper.

3,574,345
TREATMENT OF FINELY DIVIDED MATERIALS
Ronald Eric Brociner, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England
Filed Aug. 13, 1968, Ser. No. 752,293
Claims priority, application Great Britain, Aug. 18, 1967, 38276/67
Int. Cl. B28c 7/04
U.S. Cl. 259—148 **7 Claims**



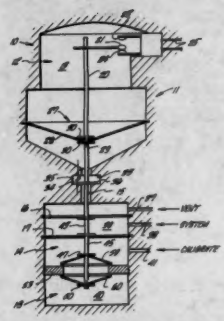
A process for treating particulate materials, such as clays and chalks, predominantly comprising particles smaller than 75 microns equivalent spherical diameter wherein a filter cake of the material is passed through a pugmill having an *L/D* ratio in the range of from 4:1 to 10:1 under conditions such that the energy absorbed by the material is greater than 40 horsepower hours/ton of the material.

3,574,346
FUEL SYSTEM
Janusz S. Sulich, Detroit, Mich., assignor to The Bendix Corporation
Filed Aug. 21, 1968, Ser. No. 754,505
Int. Cl. F02m 7/06
U.S. Cl. 261—36 **9 Claims**



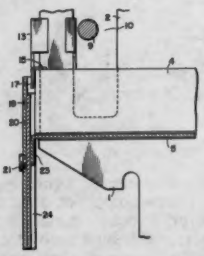
A fuel control system utilizing proportional fluidic amplifiers wherein the primary control is responsive to mass airflow derived from a venturi in the engine intake manifold. The invention is particularly characterized by the addition of compatible fluidic enrichment devices superimposed on the primary control. One enrichment device utilizes a saturable fluidic amplifier sensing manifold vacuum as a control parameter to provide selective enrichment under full power conditions. Another enrichment device develops a derivative signal proportional to the rate of change of manifold vacuum to provide a temporary fuel augment during acceleration. Idle bleed means are provided to modify the mass airflow to fuel relationship during idle conditions.

3,574,347
MECHANICAL ACTUATOR HAVING ADJUSTABLE SPRING RATE
Richard E. Hughes, Venice, Calif., assignor to Southwestern Industries, Inc., Los Angeles, Calif.
Filed Mar. 7, 1968, Ser. No. 711,304
Int. Cl. F16f 1/32
U.S. Cl. 261—162 **12 Claims**



An actuator including a resiliently biased principal actuating member which is coupled to a pair of Belleville springs adjusted to have a total spring rate equal in magnitude and opposite in value to that of the resilient bias of the principal actuating member through a predetermined deflection range of the actuating member.

3,574,348
PAPER SHEET FEEDING DEVICE FOR THE USE OF PRINTING MACHINES OR COPYING MACHINES
Tamaki Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 22, 1968, Ser. No. 746,496
Claims priority, application Japan, Aug. 17, 1967, 42/70396;42/70397
Int. Cl. B65h 1/04
U.S. Cl. 271—61 **4 Claims**



A paper sheet feeding mechanism for feeding the top sheet from a stack of sheets including power driven feed rollers to contact the top sheet of the stack and move it against corner separating fingers located at the forward corners of the stack.

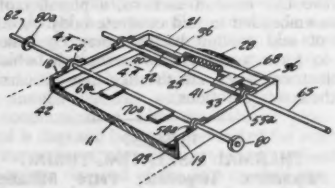
3,574,349
PENDULUM TYPE GOLF PUTTER
Norbert Victor Kropp, 1618 Credition Parkway, Port Credit, Ontario, Canada
Filed Sept. 23, 1968, Ser. No. 761,583
Int. Cl. A63b 53/14
U.S. Cl. 273—81 **3 Claims**

A golf putter having a shaft the axis of which is subperpendicular to the sole-edge of the putter-face, the lower end of the shaft overlying the putter head, the shaft including a grip of substantially greater diameter than the

lower portion of the shaft, said grip being of elongated, cross-sectionally segmental configuration to present a flattened rear side portion designed to lie against the player's forearm

when supinate. The entire length of the shaft is disposed between two spaced vertical planes extending upwardly from the toe and heel of the head.

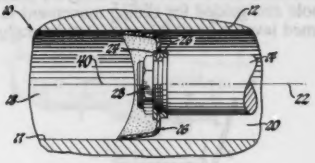
3,574,350
SLAP SHOT HOCKEY GAME
John F. May, 650 Main St., New Rochelle, N.Y. 10801
Filed Oct. 4, 1968, Ser. No. 765,263
Int. Cl. A63f *7/06*
U.S. Cl. 273—85 **1 Claim**



A hockey game apparatus, the device comprising an open box containing a playing field for a puck, a series of parallel spaced apart, transverse handles placed over the playing field, each handle being axially slidable and pivotable and having sideward extending paddles for striking the puck toward either of an opposing goal pocket at each opposite end of the playing field. On either side of the goal openings there is provided a strip element providing a vertical stop. Lying against each strip element is an inclined banking surface. The paddle most nearly adjacent the goal opening is constructed to clear the top of the vertical stop to remove the ball if it should come to rest thereon.

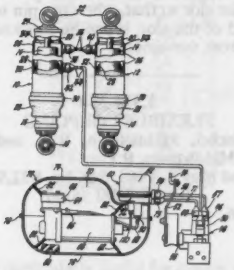
3,574,351
RECIPROCATING SEAL ASSEMBLY
Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 30, 1969, Ser. No. 872,669
Int. Cl. F16j *9/08*
U.S. Cl. 277—212 **2 Claims**

A seal assembly for the space between a bore and a relatively reciprocating shaft includes a cup-shaped sealing member mounted at one end on the shaft and having an axially extending outer conical sleeve which radially outwardly terminates at the other end in a peripheral sealing edge defined by the intersection of the conical sleeve with a right cylindrical surface having an axis perpendicular to the axis of the sealing member. The sealing edge is in the form of a two-cycle sine wave and is biased against the bore by axial



surface bending to establish sealing contact in an infinite number of radial planes.

3,574,352
AUTOMATIC VEHICLE LEVELING SYSTEM HAVING ELECTRONIC PRESSURE SWITCH CONTROL
James O. Elliott, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 17, 1969, Ser. No. 816,901
Int. Cl. B60g *17/00*
U.S. Cl. 280—124 **6 Claims**

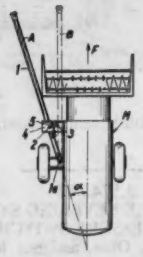


In preferred form, an automatic vehicle leveling system including a fluid spring component, an electric motor-driven compressor and a storage tank. A height controller controls pressure in the fluid spring means in accordance with vehicle load. A diaphragm operated electrical switch is responsive to system pressure to complete a start circuit for the drive motor. It is associated with a solid-state control module and relay hold switch that shunt the pressure switch whereby it opens without arcing. A timer circuit in the module maintains the motor energized whereby the system is pumped down to cause the pressure switch to be pressure biased against operation in response to road movements of the vehicle.

3,574,353
LATERALLY SWINGABLE HITCHING POLE FOR AGRICULTURAL MACHINE
Werner Fromme, Greffen, and Helmut Claas, Harsewinkel, Germany, assignors to Gebr. Claas, Harsewinkel uber Gutersloh, Germany
Filed Apr. 30, 1969, Ser. No. 820,490
Int. Cl. B60d *1/16*
U.S. Cl. 280—462 **7 Claims**

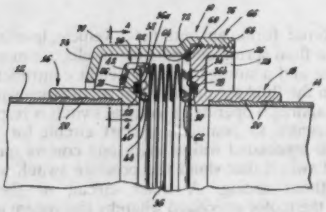
An agricultural machine of the type which is drawn by tractor or other locomotion-providing vehicle. The machine has a wheeled carriage traveling in predetermined direction, a hitching pole for hitching the carriage to the tractor or like vehicle, mounting means mounting one end of the hitching pole to the carriage for pivoting movement relative thereto about a pivot axis between two positions in one of which the hitching pole stands in substantial parallelism with the direction of travel and in the other of which it extends transverse to the direction of travel laterally beyond the carriage. Arresting means arrests the hitching pole in the

respective positions thereof and includes a traverse member provided on the carriage and having a slot one portion of which extends substantially normal to the direction of travel and the other portion of which is inclined to the one portion and to the direction of travel. A pin is rigidly provided on the hitching pole and guided for sliding movement in the slot. A double-armed lever is pivotably mounted laterally of the slot



so that the respective end portions of its arms can move across the slot at one or the other end of the latter, and a manually operable handle is associated with this lever and serves to move one or the other end portion of the arms thereof across the slot so that, when the pin is located at one or the other end of the slot, it can be blocked in its position and prevented from movement.

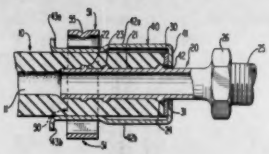
3,574,354
FLEXIBLE COUPLING
Howard T. Mischel, Middletown, R.I., assignor to Avica Corporation, Middletown, R.I.
Filed May 8, 1969, Ser. No. 822,958
Int. Cl. F16l *55/00*
U.S. Cl. 285—16 **8 Claims**



The disclosed flexible coupling is for joining sections of rigid conduit, with provision for angular and axial flexibility, and static sealing against fluid leakage. The conduit sections are interconnected by a tubular metal bellows, secured by split rings and a coupling nut to ferrules swaged to the conduit ends. O-ring or similar seals are provided in recesses in the ferrules abutting the ends of the metal bellows to provide sealing means which do not flex despite lateral and axial flexure of the bellows. The coupling may be readily removed or repaired in situ by manual removal of the coupling nut and release of the split rings. In an alternate embodiment at least one of the bellows ends is swaged in place between the ferrule and the conduit end, eliminating and O-ring seal.

3,574,355
HOSE CONNECTION
Hans Oetiker, Oberdorfstrasse 21, Horgen, Switzerland
Filed Sept. 24, 1968, Ser. No. 762,076
Int. Cl. F16l *33/20*
U.S. Cl. 285—39 **18 Claims**

A hose connection between a nipple and a hose which includes a sleeve having a plurality of axially extending finger portions mounted over the hose and a clamp with one or

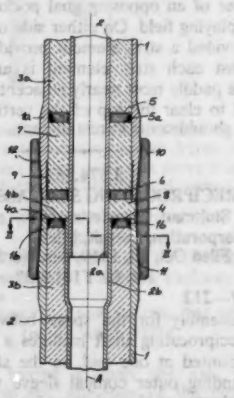


more folds adapted to be contracted for securely clamping the sleeve onto the hose and thus the hose onto the nipple.

3,574,356
PREFORMED CONDUIT
Phillip Salerno, 720 Avenue W, Brooklyn, N.Y., and Michael Sammaritano, 910 Manor Lane, Bayshore, N.Y. 11706
Filed Mar. 19, 1969, Ser. No. 808,452
Int. Cl. F16l *35/00, 55/00*
U.S. Cl. 285—39 **4 Claims**

A preformed conduit for underground cables, electrical wires and the like consists of a plurality of pipes encased within an elongated concrete body which is formed by pouring concrete around said plurality of pipes as the latter are supported in parallel, spaced relationship. Reinforcing means comprising longitudinally and transversely extending members are preassembled in place before the concrete is poured therearound. To facilitate joining the longitudinal ends of two like conduit sections, a plurality of coupling means are embedded in said concrete body. Accordingly, a plurality of said conduit sections may be joined to one another to form a continuous conduit in which various cables, electrical wires and the like may be carried in the pipes of the conduit sections.

3,574,357
THERMAL INSULATING TUBING
Cassius Alexandru, Tirgoviste; Petre Mihailescu, and Alexandru Stanescu, Bucharest, Romania, assignors to Grupul Industrial Pentru Foray Si Extractia Titeiului, Bucuresti, Bucuresti-Comuna Bolintinu, Romania
Filed Feb. 27, 1969, Ser. No. 802,871
Int. Cl. F16l *59/14*
U.S. Cl. 285—47 **9 Claims**



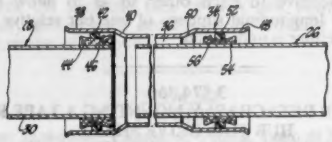
An insulated pipe for a deep-well string comprises two coaxial tubes, one inside the other, with a mass of thermal

insulation between them. The inner tube has an enlarged upper end and a lower end that extends beyond the outer tube to allow two such pipes to telescope together. A ring connects the enlarged end of the inner tube to the inside of the outer tube while a second ring connected only to the inside of the outer tube serves as a guide for the inner tube, thereby allowing longitudinal expansion thereof. The rings act as axial walls confining the insulating mass between them.

3,574,358
FLEXIBLE PIPE COUPLING

Thomas R. Cassel, Birmingham, Mich., assignor to Thomas R. Cassel, Birmingham, Mich., fractional part interest to each; Kenneth W. Cassel, Cincinnati, Ohio, fractional part interest to each; R. Nelson Cooksey, Indianapolis, Ind., fractional part interest to each; Keevin J. Cassel, Union Lake, Mich., fractional part interest to each and William E. Neighbors, St. Petersburg, Fla., fractional part interest to each

Filed Oct. 30, 1968, Ser. No. 771,786
Int. Cl. F16l *21/02, 27/12, 59/14*
U.S. Cl. 285—53 **7 Claims**



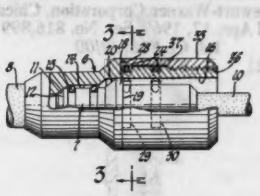
A flexible pipe coupling particularly adaptable to an exhaust system for a motor vehicle having an internal combustion engine and a vehicle frame. The flexible coupling may be disposed generally midway of the exhaust system, at which point a first pipe, such as the exhaust pipe leading from the engine manifold, coaxially receives, or terminates adjacent the end of, a portion of a second pipe, such as the tailpipe extending rearwardly of the vehicle. An intermediate pipe is received about the ends of the exhaust pipe and the tailpipe, and is coaxial therewith. The intermediate pipe defines an annular chamber with the tailpipe, the chamber being in communication with the exhaust pipe. A first resilient seal is disposed between one end of the intermediate pipe and the exhaust pipe and a second resilient seal is disposed between one end of the intermediate pipe and the tailpipe. Heat insulating means are disposed between the resilient seals and the exhaust and tailpipes respectively, to limit heat transfer from hot exhaust gasses to the resilient seals and the intermediate pipe. The resilient seals and the dimensional parameters in the coupling permit angular movement of the exhaust pipe and tailpipe relative to each other, and the intermediate pipe may be formed so as to limit axial movement of the pipes relative to each other under operating conditions of the vehicle. The annular chamber between the intermediate pipe and the tailpipe is dimensioned so that the coupling acts as a sound-attenuating device, attenuating sounds in a particular range of frequencies emanating from the engine and passing with the exhaust gasses.

3,574,359
FLUID CONDUIT COUPLING

Lee F. Klein, North Tonawanda, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed July 22, 1969, Ser. No. 843,622
Int. Cl. F16l *15/00*
U.S. Cl. 285—86 **4 Claims**

A readily detachable coupling for conduits for fluid under pressure embodies a socket and a plug which is inserted into the socket and which is in sealing relation with the socket when fully inserted. The socket has a sleeve threaded to its outer surface which serves to retain two axially spaced sets of detents of horseshoe shape, one set of detents retaining the plug in fully inserted position. To disconnect the system, the sleeve is unscrewed and the first set of detents is removed. This allows the plug to move outwardly to an unsealed position to bleed the system, after which the sleeve is further

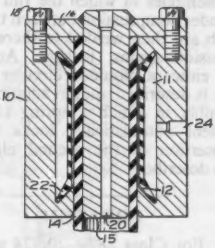


unscrewed to release the second set of detents and allow disconnection of the coupling.

3,574,360
FLUID-PRESSURE-TYPE HOSE CLAMP

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 19, 1969, Ser. No. 800,664
Int. Cl. F16l *17/00*
U.S. Cl. 285—96 **2 Claims**

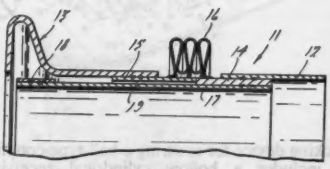


A hose clamp particularly useful for testing purposes which forms a fluidtight connection with the end of a length of hose by the use of a flexible elastic sleeve brought into firm engagement with the surface of the hose by fluid under pressure, thus preventing damage to the hose.

3,574,361
FLEXIBLE JOINT FOR PIPING SYSTEMS

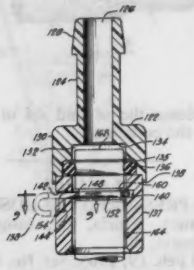
Gilbert E. Contreras, Los Angeles, and Frank P. Rindfleisch, Venice, Calif., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Feb. 13, 1969, Ser. No. 799,553
Int. Cl. F16l *27/10*
U.S. Cl. 285—226 **2 Claims**



A pair of tubes have short inner sleeves extending therefrom, and a flexible bellows is secured to these sleeves and connects the two tubes. A tubular guide extends from inside one of the sleeves through the other and has an annular stop. There is clearance between the guide and the sleeve through which it extends, thus permitting limited relative lateral shifting of the two tubes. Axial play between the two tubes is limited by engagement of the sleeve surrounding the guide with the first sleeve and with the stop.

3,574,362
VACUUM SYSTEM COUPLING
Eric Gregg, Divernon, and Robert E. Hunter, Virden, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed Apr. 17, 1969, Ser. No. 816,899
Int. Cl. F16l 39/00
U.S. Cl. 285—321 **1 Claim**

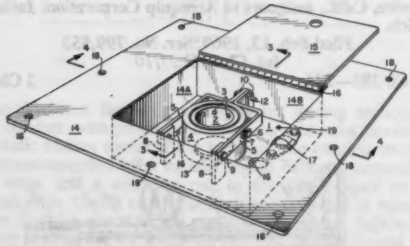


The following specification describes plastic coupling and check valve assemblies in which the rim of a rubber check valve is held under compression between two plastic coupling elements which are then welded to thereafter hold the rim under compression against leakage. An improved check valve utilizing either a moulded circular edge or a conical sealing surface is described and, in addition, a quick connect coupling assembly in which a spring clip located in one coupling element automatically locks a second element thereto on insertion of the second element in the one element is also described.

ERRATUM

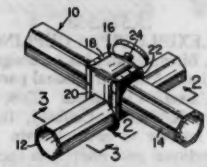
For Class 287—20.924 see:
Patent No. 3,574,510

3,574,363
LOCKING DEVICE
George T. Stephenson, Denton, Tex. (1406 Fannidella #133, Carrollton, Texas 75006)
Filed Nov. 12, 1968, Ser. No. 774,846
Int. Cl. F16c 11/06
U.S. Cl. 287—21 **6 Claims**



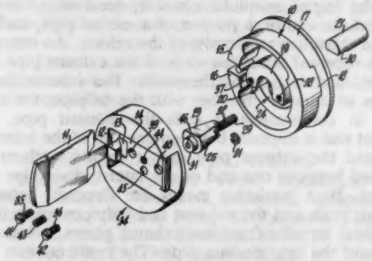
A locking device for securing a ball-type coupling to a base which includes a hollow cylindrical receiving cylinder adapted to receive the ball of the ball-type coupling, a series of spheres movably mounted in the periphery of the receiving cylinder, a securing cylinder adapted to fit over the receiving cylinder and engage the spheres, and a pair of hinged arms attached to the securing cylinder whereby the securing cylinder can be raised or lowered. The securing cylinder and receiving cylinder are so mechanically interrelated that when the ball is placed in the latter and the hinged arms are depressed, the securing cylinder is lowered into place over the receiving cylinder and the ball of a ball-type coupling is securely, but rotatably, locked inside the receiving cylinder.

3,574,364
FRAME JOINT
Robert J. Langren, Alameda, Calif., assignor to Gilbert Hyde Chick Company, Oakland, Calif.
Filed Mar. 13, 1969, Ser. No. 806,917
Int. Cl. F16b 7/00
U.S. Cl. 287—51 **6 Claims**



A frame joint includes first and second elongated bars generally perpendicular to each other, the bars being equilaterally octagonal in cross section, and means for forcing the bars together in such a way that they are stably positioned relative to each other so as to allow neither skewing nor longitudinal slippage of one bar relative to the other when either is under load.

3,574,365
LOCK FOR DETACHABLY MOUNTING A TAPE REEL HUB TO A DRIVE SHAFT
James K. Bailey, Commack, and Warren H. Enners, Farmingdale, N.Y., assignors to Potter Instrument Company, Inc., Plainview, N.Y.
Filed Apr. 7, 1969, Ser. No. 814,106
Int. Cl. F16d 1/06
U.S. Cl. 287—53 **1 Claim**

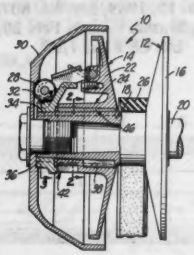


The specification and drawings disclose a lock for detachably mounting a tape reel hub to a drive shaft in which a conical plug is drawn into a conical slot in the hub forcing the plug upwardly so that a flat surface on the plug tightly engages a corresponding flat surface on the motor drive shaft.

3,574,366
SPLINE LINER
Lewis D. Thostenson, Hawthorne, Calif., assignor to Instrument Systems Corporation
Filed July 23, 1969, Ser. No. 844,074
Int. Cl. F16d 1/06
U.S. Cl. 287—53 **6 Claims**

A splined connection between inner and outer members including liners between the splines on the two members. The liners are made of a material capable of withstanding torque loads which fluctuate at high frequencies, whereby the splined members themselves may be made of die cast aluminum alloys for economy. The splined portion of the inner member is longitudinally tapered while the splined portion of the outer member is untapered. The spline liners are internally tapered to match the inner member and are externally untapered to match the outer member so that the

outer member may slide longitudinally on the spline liners. This permits die casting the splines on the inner member with sufficient draft for easy removal. The use of liners between splined members in this manner is particularly useful in a

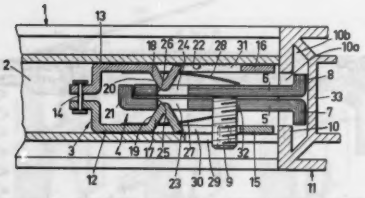


variable speed transmission wherein the outer member comprises the movable face of a V-belt pulley which is constantly shifted back and forth longitudinally to vary the pitch diameter of the pulley.

3,574,367
COUPLING

Johannes Jankowski, Campione d'Italia, Lago di Lugano Vita Totone 17, Italy

Filed Sept. 12, 1968, Ser. No. 759,386
Claims priority, application Germany, Jan. 26, 1968, J 3593 X11/47a
Int. Cl. F16b 7/04
U.S. Cl. 287—54 **29 Claims**



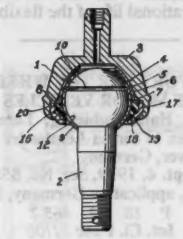
A coupling which comprises two clamping members insertable into the open-ended chamber of a first element and two locking members located between the clamping members and having hooks extending through an aperture provided in a wall of a second element. A bolt can move the locking members apart to thereby urge the clamping members against the first element and to engage the hooks with that side of the wall which faces away from the chamber. The clamping members and the locking members are provided with cams and followers or analogous tensioning devices which cooperate to urge the hooks toward the clamping members when the locking members move apart whereby the wall is pressed against the clamping members and/or against the first element.

3,574,368
PRE-LOADED BALL-JOINT

Hubert D. Songer, Murfreesboro, Tenn., assignor to Perfect Equipment Corp.

Filed Jan. 16, 1970, Ser. No. 3,298
Int. Cl. F16c 11/06
U.S. Cl. 287—87 **5 Claims**

The invention is in a preloaded ball-joint wherein the ball-head of the stud pin is provided with a sheath such as of phosphor-bronze in wear engagement with a wear-resistant bushing, the sheath being permanently interlocked to said head through a ring that has been initially mounted on said

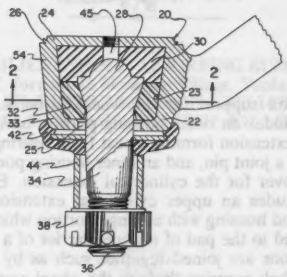


head and which is imbedded in the interior of said sheath during the assembly of the latter onto said head.

3,574,369
BALL JOINT

John R. Andrew, Columbus, Ohio, assignor to The Columbus Auto Parts Company, Columbus, Ohio

Filed Apr. 7, 1969, Ser. No. 813,901
Int. Cl. F16c 11/06
U.S. Cl. 287—90 **4 Claims**

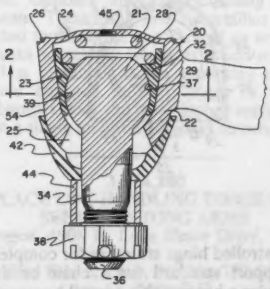


A flexible joint construction such as is used in automotive steering linkages or the like wherein upper and lower electrically conductive housing portions are fused together at a junction, uniform torque-transmitting and vibration-damping characteristics that are accurately maintained throughout the operational life of the flexible joint.

3,574,370
BALL JOINT

John R. Andrew, Columbus, Ohio, assignor to The Columbus Auto Parts Company, Columbus, Ohio

Filed Apr. 7, 1969, Ser. No. 813,983
Int. Cl. F16c 11/06
U.S. Cl. 287—90 **8 Claims**



A flexible joint construction such as is used in automotive steering linkages or the like wherein upper and lower

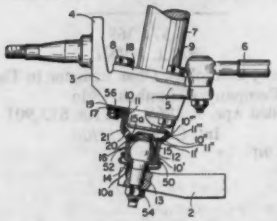
electrically conductive housing portions are fused together at a junction, uniform torque-transmitting and vibration-damping characteristics that are accurately maintained throughout the operational life of the flexible joint.

3,574,371

BALL JOINT SUPPORT FOR THE WHEEL SUSPENSION OF MOTOR VEHICLES

Georg Kindel, and Hans Dubielzig, Lemforde, Hannover, Germany, assignors to Firma Lemforder Metallwaren AG, Lemforde, Hannover, Germany

Filed Sept. 4, 1969, Ser. No. 855,301
Claims priority, application Germany, Nov. 7, 1968, P 18 07 465.2
Int. Cl. F16c *11/06*
U.S. Cl. 287—90 **12 Claims**



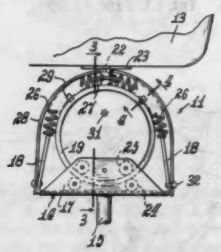
A ball joint support for the wheel suspension of motor vehicles includes an outer housing portion having a central cylindrical extension forming a seat for a bearing liner and a ball head of a joint pin, and an inner housing portion forming a central cover for the cylindrical extension. Each housing portion includes an upper cylindrical extension forming a double walled housing with a flange portion which is adapted to be secured to the pad of a wheel carrier of a vehicle. The two extensions are joined together such as by indentations and by the bolt securing them to the wheel carrier pad. The upper extensions are widened out in the manner of a truncated cone and then form cylindrical portions with flanges at their outer peripheries which are bolted to the pad.

3,574,372

SPRING HINGE STRUCTURE

James G. Oxford, Elgin, Ill. (Rte. 1, Cave-In-Rock, Ill., 62919)

Filed Feb. 16, 1970, Ser. No. 11,736
Int. Cl. F16c *11/00*
U.S. Cl. 287—100 **10 Claims**



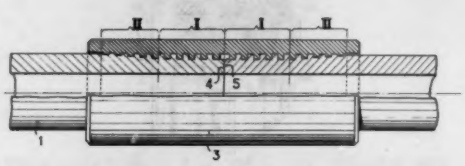
A spring controlled hinge structure for complemental parts such as a support standard for a chair or the like. The structure includes a bearing ring carried by one standard part being journaled on rollers on the other standard part and a pair of springs connecting the parts and adapted to bias the parts into coaxial alignment.

3,574,373

SEPARABLE CONNECTING DEVICE, ESPECIALLY FOR COMPONENTS OF TUBULAR BRACES

Jean Le Derf; Charles Soulier, and Georges Trouillet, Aulnoye-Aymeries (Nord), France, assignors to Societe anonyme dite: Vallourec (Usines a Tubes de Lorraine - Escaut et Vallourec Reunies).

Filed Feb. 17, 1969, Ser. No. 807,163
Claims priority, application France, Feb. 20, 1968, 140490
Int. Cl. F16d *1/02*
U.S. Cl. 287—117 **8 Claims**



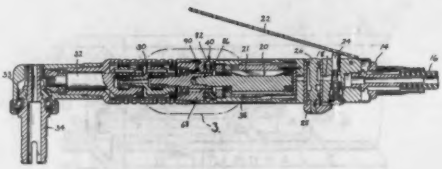
Separable connection device for elongated members to be used as ties or braces in which two members are assembled by means of a threaded sleeve bringing into abutment the extremities of said two elements. The threading for securing the sleeve to the members is cylindrical and the threads have a rectangular, square or trapezoidal section and a height (or depth) which decreases gradually until it becomes zero in the vicinity of at least one end of the threading.

3,574,374

SURGICAL INSTRUMENT

Donald D. Keller, Bourbon, Ind., and Richard D. Robinson, Bryan, Ohio, assignors to Orthopedic Equipment Company, Bourbon, Ind.

Filed Jan. 16, 1969, Ser. No. 791,582
Int. Cl. F16d *1/10*
U.S. Cl. 287—119 **10 Claims**



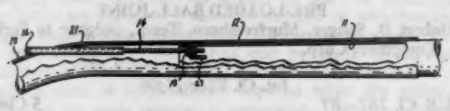
A surgical instrument including a body member which houses a motor and removably mounts an interchangeable head member. The body member includes a socket part which interlockingly receives an insert part of the head member in any selected rotative position relative to the head part. Means are provided for coupling the drive shaft of the motor to a driven shaft in the head member upon insertion of the insert part of the head member into the socket part of the body member.

3,574,375

MULTIPLE SECTION ARM EXTENSION FOR TRAFFIC SIGNAL POLES

Mertz O. Scott, Oakland, Calif., assignor to Ameron Incorporated, Monterey Park, Calif.

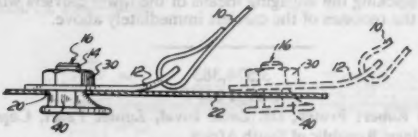
Filed May 26, 1969, Ser. No. 827,515
Int. Cl. F16b *7/10*
U.S. Cl. 287—119 **5 Claims**



A multiple section davit arm extension for traffic signal poles wherein a pair of tubular tapered sections are

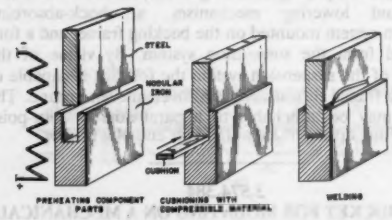
telescopically engaged and secured by internally mounted, tensioning means having a manually engageable part exteriorly of the sections for drawing the sections together.

3,574,376
SHEARABLE RESTRAINING MEANS
Wayne Cummins, P.O. Box 96, Garden City, Mich. 48135
Filed Feb. 24, 1970, Ser. No. 13,559
Int. Cl. F16b *21/09*
U.S. Cl. 287—189.36 1 Claim



A shearable restraining means of the bolt type which anchors two parts together. The bolt features a hardened plow shaped shank functioning as a cutter. When the bolt is moved by one part under excessive load it cuts and plows a slot in the other part. The energy required to plow such slot provides a dissipation of the energy of excessive tension on the first part.

3,574,377
CUSHIONED JOINT OF MODULAR IRON TO STEEL
William H. Petitt, Chattanooga, Tenn., assignor to The Harriman Manufacturing Company, Chattanooga, Tenn.
Continuation-in-part of application Ser. No. 356,418, Apr. 1, 1964. This application Dec. 24, 1968, Ser. No. 786,784
Int. Cl. F16b *5/08*
U.S. Cl. 287—189.36 2 Claims

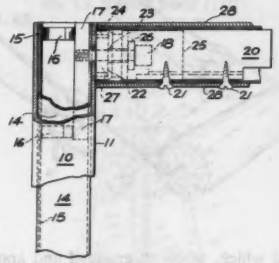


This is a cushioned joint, fabricated from materials having different coefficients of thermal expansion and contraction, in particular a welding of nodular iron to steel.

A surface on a member made of one of the materials is positioned adjacent a surface of a second member made of the other material. A cushioning means is positioned between the two surfaces spacing the one surface from the other. The members are then welded together at positions distal from the cushioning means and the latter provides space for relative movement between the members due to their differing coefficients of thermal contraction as they cool after the welding is completed.

3,574,378
STRENGTHENING INSERT AND FASTENER FOR TUBULAR CONSTRUCTIONS
James H. Heywood, 1411 Doncaster Drive, Youngstown, Ohio
Filed May 26, 1969, Ser. No. 827,531
Int. Cl. F16b *7/04*
U.S. Cl. 287—189.36 5 Claims

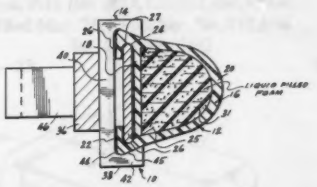
A strengthening insert and fastener for a tubular construction including one portion having expandable members engageable in one tube and an attached movable fastener extending outwardly therefrom and engaging a fixed elongated complementary fastener and reinforcing member in another tube.



ERRATUM

For Class 293—71 see:
Patent No. 3,574,406

3,574,379
RESILIENT SHOCK-ABSORBING BUMPER
Alexander T. Jordan, 48 Mohegan Village, Yonkers, N.Y.
Filed July 8, 1968, Ser. No. 743,147
Int. Cl. B60r *19/08*; B61f *19/04*; F16d *57/00*
U.S. Cl. 293—71 11 Claims

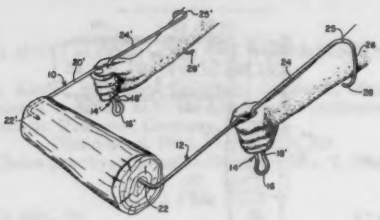


A shock-absorbing device comprising a bumper pad and dovetail mounting structure. The bumper pad includes a tubular casing made of nonporous, flexible plastic material with flanges on one side for removable attachment to a bracket. The other side of the pad is convex. The casing is filled with resilient, spongy, cellular foam material saturated with a liquid. Opposite ends of the casing are closed by breakable seals. The casing and foam filler flex yieldably when subjected to moderate impact, and on severe impact an end seal breaks to release liquid at a controlled rate. The bumper pad is attached to the mounting structure by a spreader plate engaged in the flanges of the casing. A plurality of bumper pads can be mounted vertically in spaced disposition in a single mounting bracket structure.

3,574,380
FIREPLACE LOG-HANDLING TONGS HAVING SEPARATE TONG ARMS
Robert J. Tague, 4908 E. Lake Shore Drive, Wonder Lake, Ill. 60097
Filed Feb. 6, 1969, Ser. No. 797,049
Int. Cl. B65g *7/12*
U.S. Cl. 294—16 3 Claims

Fireplace log-handling equipment consisting of two

separate tong arms, each of which is engageable by a hand of the user and which, when so engaged and applied to a log, exerts a tongs action thereon for lifting purposes.



3,574,381
CLAMPING TOOL

Robert M. Ocheltree, 815 Pacific Hwy., Hubbard, Oreg., and Jack L. Thompson, 10071 Lampson Ave., Apt. 7, Garden Grove, Calif. 92640

Filed Nov. 15, 1968, Ser. No. 776,138
Int. Cl. B65b *1/08, 9/02*
U.S. Cl. 294—19 **3 Claims**

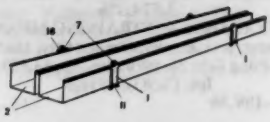
This invention relates to improvements in clamping tools of the kind in which a number of clamping elements are movable to change the separation between them in a given plane by the application of a force in a direction making an angle with that plane and usually perpendicular to the plane. The embodiment selected for illustration is a clamping tool whose elements are moved apart to clamping position by forcing a cam between spring elements to which the clamping elements are fixed.

3,574,382
DEVICE FOR CONVEYING AND STORING OBJECTS

Hans Ulrich Strauss, Zollikerberg, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed Aug. 4, 1969, Ser. No. 847,028
Claims priority, application Switzerland, Aug. 2, 1968, 11623/68
Int. Cl. B65g *1/14*
U.S. Cl. 294—67 **7 Claims**

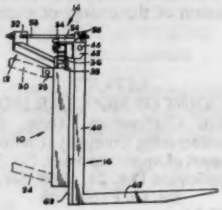
A device for conveying and storing objects in guide carrying vessel means, such as containers or plate supports, has two U-shaped carriers that are spaced apart from each other and support the vessel means and have inner guide means engaging the vessel guides, have at the free ends of the legs of the carriers upper support surfaces, for carrier stacking, and have engaging means adapted to be engaged by a lifting device for conveyance, and have near the base of the leg portions recesses that correspond substantially in shape to that of the engaging means for the lifting devices so that during stacking the engaging means of the lower carriers will fit into the recesses of the carriers immediately above.



3,574,383
FORK LIFT

Adrian Robert Frater, DE Zoete Inval, Zuider Paarl, Cape Province, Republic of South Africa

Continuation of application Ser. No. 628,433, Apr. 4, 1967, now abandoned. This application Aug. 26, 1969, Ser. No. 854,027
Int. Cl. B66c *1/24;* **B66f** *9/12*
U.S. Cl. 294—67 **6 Claims**

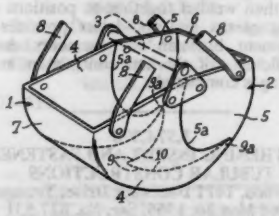


A fork lift comprising a backing frame, for attachment to a lifting and lowering mechanism, a shock-absorbing suspension system mounted on the backing frame, and a fork suspended from the suspension system. By virtue of the provision of the suspension system the fork lift is capable of carrying a fragile or sensitive load over uneven ground. The fork lift may be attachable to a parallelogram four-point linkage lifting arrangement at the rear end of a tractor.

3,574,384
GRAB BUCKET FOR MOUNTING ON A MECHANICAL EXCAVATOR OR LOADER

Jean Pierre Bellart, Senlis, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville, Oise, France

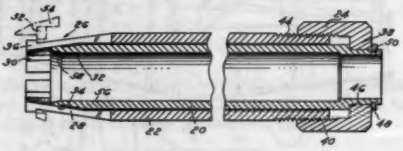
Filed Apr. 14, 1969, Ser. No. 815,591
Claims priority, application France, Apr. 18, 1968, 148,523
Int. Cl. B66c *3/02*
U.S. Cl. 294—70 **4 Claims**



The invention relates to a grab bucket for mounting on a mechanical excavator or loader and comprising two shell parts pivoted so as to permit the grab bucket to be opened or

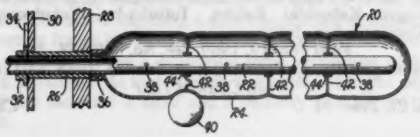
closed, the invention consisting in providing the bottom attacking edges of said shell parts respectively with a pointed portion and a complementary cutaway portion so that in the closed position of the grab bucket the pointed portion of one shell part interengages in the cutaway portion of the other shell part to completely close the bottom of the grab bucket.

3,574,385
GRAPPLING DEVICE
Tony Pignataro, Jr., Montpelier, Ohio, assignor to Robinair Manufacturing Corporation, Montpelier, Ohio
Filed Feb. 24, 1969, Ser. No. 801,486
Int. Cl. E21b 31/12
U.S. Cl. 294—86.25 11 Claims



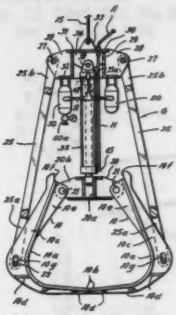
A grappling device, including a generally cylindrical body member, an annular grappling sleeve telescopically received over the body member, and a nut member rotatably secured to the body member threadably receiving the grappling sleeve. The sleeve includes a plurality of resilient grappling fingers extending beyond the body member opposite the nut member. The fingers are tapered inwardly, toward the axis of the sleeve, to resiliently engage the body member.

3,574,386
GRASPING FINGERS
James D. Frost, P.O. Box 775, Porterville, Calif. 93257
Filed June 17, 1968, Ser. No. 737,557
Int. Cl. B66c 1/10
U.S. Cl. 294—87 13 Claims



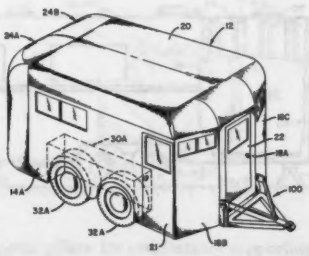
Improved inflatable grasping or picking fingers forming article-grasping elements for handling various articles, such as in the picking of fruit from trees or transferring fruit or food from one conveyor to another or depositing the same within containers, each finger having a rigid support or "bone" and tie means for limiting the radial distention of the finger from the support when it is inflated. In one form of the invention, the outer covering of the finger is connected to the central support by flexible threads or strands. In another form, the outer covering is connected to the central support by a web of sheet fabric disposed transversely or longitudinally of the support. In still another form, the outer contour of the finger is defined by the free portions of a plurality of sections or chambers of flexible material. In one form the sections are partitioned longitudinally of the central support with provision for individually selectively inflating the sections. In another form, the sections are substantially coextensive with and disposed circumferentially about the central support with the longitudinal axes of the sections generally parallel thereto, including means for selectively inflating any or all of the sections; whereby some of the articles being grasped may be dropped while a holding grip is retained on others. In still another form, the sections are partitioned both longitudinally and circumferentially of the central support.

3,574,387
POWER ASSEMBLY FOR GRAPPLE OR BUCKET
Oscar W. Hahn, Houston, Tex., assignor to McGinnes, Mfg. Co.
Filed Nov. 12, 1968, Ser. No. 774,876
Int. Cl. B25b ; B66c 1/10
U.S. Cl. 294—88 7 Claims



A power assembly for a grapple or clamshell bucket having a plurality of pivoted tines or bucket elements which are actuated to a closed or holding position by hydraulic pressure and which are moved to an open or extended position by compressed gas means, and wherein a single hydraulic hose from the grapple or bucket to a crane or other location of hydraulic power serves for connecting hydraulic power to the grapple.

3,574,388
CONVERTIBLE TRAILER
Edwin A. Stone, P.O. Box 1039, Chico, Calif. 95926
Filed Mar. 25, 1968, Ser. No. 715,696
Int. Cl. B60p 3/32
U.S. Cl. 296—23 4 Claims

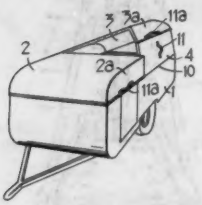


A trailer for hauling horses, and the like, which trailer is convertible for use as living quarters. The trailer includes a body comprising a bed, sidewalls, front wall, roof and rear doors. Wheel wells are provided inside the trailer at opposite sides thereof to accommodate extendible and retractable wheels. Combination inner sidewall and floor panels are pivotally mounted inside the trailer adjacent the bed and wheel wells, which panels are pivotally movable between generally vertical positions wherein they serve as inner sidewalls, and generally overlapping horizontal positions wherein they serve as a floor above the trailer bed. The retractable wheel mounting includes a pair of lever arms pivotally mounted on a common axis, one of which arms carries the wheel, and the other of which is releasably locked in fixed position. A coil spring and shock absorber is provided between the pair of arms. The wheels are retracted by releasing the lock and pivoting the wheels up into the wheel wells.

3,574,389
COLLAPSIBLE CARAVANS

Johannes Martinus Smit, 8 Rust-en-Vrede, and Donald Dallaway Deary, 31 Riverside, Pinelands, Cape, South Africa

Filed Nov. 13, 1968, Ser. No. 775,432
Claims priority, application South Africa, Nov. 20, 1967, 67/6939
Int. Cl. G60p *3/34*
U.S. Cl. 296—27 8 Claims

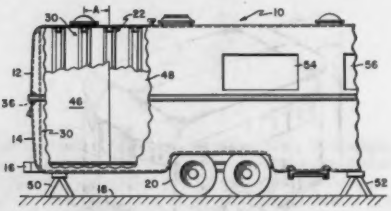


To facilitate erection, the collapsible caravans comprise rigidly paneled sidewalls, end walls and roof, in which walls are divided into two or more separable parts by divisions which in the erected state extend uprightly and in which the roof is correspondingly divided by divisions essentially forming continuations of the wall divisions. The divisions in the roof may be slightly offset in the longitudinal direction with relation to the corresponding divisions in the walls. Erection or collapsing proceeds sectionwise.

3,574,390
APPARATUS FOR MAKING VEHICLE BODIES

William E. Metsker, Tulsa, Okla., assignor to Avco Corporation, Tulsa, Okla.

Filed May 1, 1969, Ser. No. 820,729
Int. Cl. B62d *39/00*
U.S. Cl. 296—28 6 Claims



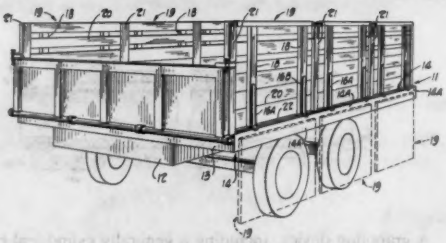
The disclosure illustrates a trailer vehicle formed from upper and lower molded shells. A series of lateral roof braces are positioned at given spacings along the inside roof of the vehicle. The roof braces have recesses in their ends which receive one-piece vertical sidewall braces for reinforcing both the upper and lower shell walls. The sidewall braces are pivoted to a vertical position relative to the trailer shells and fixed to the upper and lower shells. The sidewall braces additionally provide a support for interior wall paneling.

3,574,391
VEHICLE GATE HINGE CONSTRUCTION

Stephen D. Doboze, Lakewood, Ohio, assignor to Scranton Truck Body Equipment Co.

Filed May 26, 1969, Ser. No. 827,775
Int. Cl. B62d *25/02*
U.S. Cl. 296—36 10 Claims

A vehicle gate hinge construction in which a vehicle frame member disposed along the side of the frame is tubular and of rectangular cross section, having at the location where the gate hinge is mounted an open space provided in its upper horizontal wall and an open space provided in its outer vertical wall, the open spaces being contiguous at the juncture of the upper horizontal wall and outer vertical wall, a hinge member having a pintle and a pair of leaf members, the pintle being disposed generally inwardly of the tubular member at the juncture of the upper horizontal wall and outer vertical wall, the first of the leaf members being secured to the upper horizontal wall in said open space therein, and the second of the leaf members being secured to

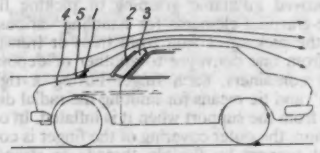


a vehicle gate for swinging of the gate between an upright position and a downward position, the socket for the hinge pintle being disposed in the open space in the outer vertical wall at said juncture between said upper horizontal wall and the outer vertical wall, the second leaf member being offset at a distance from said pintle to extend when disposed uprightly in a plane intermediate the planes of the outer and inward vertical walls of the said frame member.

3,574,392
APPARATUS FOR PREVENTING LIFTING OF WIPER BLADES FROM THE WINDSHIELD OF A VEHICLE AT HIGH SPEEDS OF TRAVEL

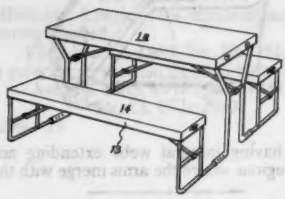
Koki Hirano, Fujisawa-shi, Japan, assignor to Jidosha Denki Kogyo Kabushiki Kaisha, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Feb. 19, 1969, Ser. No. 800,558
Claims priority, application Japan, Feb. 24, 1968, 43/11653
Int. Cl. B60j *1/20*
U.S. Cl. 296—91 7 Claims



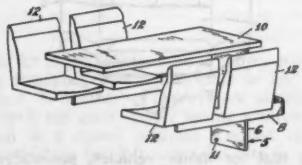
A diverting plate is positioned in front of the windshield of a vehicle for being raised to operative position, when the vehicle reaches a predetermined speed, to divert the airflow from the wiper blades of the vehicle so that the latter can be operated without lifting or floating away from the windshield due to the overflow. The diverting plate is hinged and is connected to a displaceable member which is raised at the predetermined speed to tilt the diverting plate upwardly, whereas when the vehicle slows down to a speed substantially below the predetermined speed, the displaceable member is lowered to retract the diverting plate to inoperative position.

3,574,393
COLLAPSIBLE TABLE
Russell A. Hughes, St. Charles, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Nov. 8, 1968, Ser. No. 774,243
Int. Cl. A47b 37/04
U.S. Cl. 297—157 3 Claims



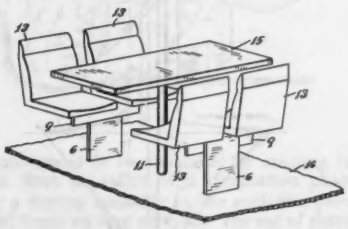
A collapsible, compact table with bench means releasably attached to the table legs where the benches and the table can be folded into a compact package for storage.

3,574,394
WALL MOUNTED BOOTH
Leslie R. VonPongracz, West Hartford, Conn., assignor to Pon-Sad, Inc., Hartford, Conn.
Filed Nov. 1, 1968, Ser. No. 772,552
Int. Cl. A47b 39/00
U.S. Cl. 297—158 2 Claims



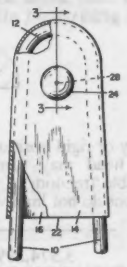
A wall mounted booth particularly intended for restaurants and the like and comprising a unit constructed to include a supporting frame including a bracket adapted to be secured to a wall and having a horizontal table supporting portion and a horizontal U-shaped seat supporting member upon which are mounted a table and a plurality of seats for said booth.

3,574,395
FLOOR MOUNTED BOOTH
Leslie R. Pongracz, West Hartford, Conn., assignor to Pon-Sad, Inc., Hartford, Conn.
Filed Nov. 1, 1968, Ser. No. 772,656
Int. Cl. A47b 39/00
U.S. Cl. 297—158 5 Claims



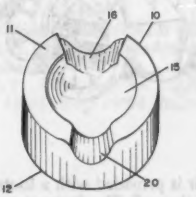
A floor-mounted booth particularly intended for restaurants and the like and comprising a self-contained unit constructed to include a supporting base upon which are mounted the supporting table and a plurality of seats for said booth.

3,574,396
HEAD OR BACKREST AND SAFETY DEVICE FOR CYCLES
Martin J. Bird, Norwalk, Ohio, assignor to Persons-Majestic Mfg., Company, Worcester, Mass.
Filed Apr. 23, 1969, Ser. No. 818,583
Int. Cl. B62j 1/00
U.S. Cl. 297—195 2 Claims



An envelope of head or back cushion receiving the upper end of a U-shaped tubular member which closely fits the envelope and tends to hold it in position, and a two-part button having an element piercing the envelope, said button having a reflective element at least at one side of the envelope and holding the latter against removal from the tubular member.

3,574,397
ORTHOPEDIC PILLOW
Jan Norriss, 4002 E. Fort Lowell, Tucson, Ariz. 85716
Filed Sept. 11, 1968, Ser. No. 759,126
Int. Cl. A47c 7/38
U.S. Cl. 297—391 4 Claims

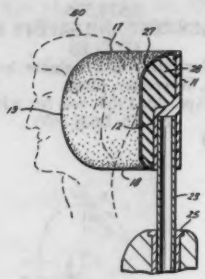


An orthopedic pillow for comfortably supporting the head and cervical areas of the user. The pillow is of a resilient material having a generally central concave cavity therein. Oppositely extending from the central concave cavity are contoured depressions to accommodate the user's neck and head. The central cavity is shaped and positioned to accommodate the user's ear without pressure when the user is lying on his side and the cavity partially supports the user's head when the user is lying on his back. One embodiment of the invention is adaptable for use with an automobile seat.

3,574,398
HEAD SUPPORTS FOR USE IN MOVING VEHICLES
Michael C. Hairgrove, 2106 A. Echols, Bryan, Tex. 77801
Filed Nov. 15, 1968, Ser. No. 776,157
Int. Cl. A47c 7/36, 7/42
U.S. Cl. 297—410 4 Claims

Head supports having portions for supporting the back and each side of the head of a person, particularly for use in moving vehicles, where there is possibility of collision which might throw the person in any direction, and in particular,

might throw the head of the person rearward or sideward with respect to the heavier body of the person, thereby causing damage to the neck. The supports do not bind the

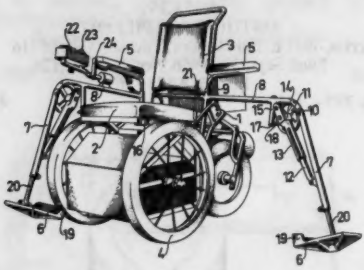


head to a stationary or rigid position, but fit the head loosely enough that the head may turn at least to an extent permitting reasonable freedom of motion and comfort. The side support positions do not limit vision to either side.

3,574,399
WHEELCHAIR INCLUDING FOOT RESTS AND ARM RESTS

Per Edward Carl Udden, General Delivery, Timra, Sweden

Continuation of application Ser. No. 751,016, June 7, 1968, now abandoned , which is a continuation of application Ser. No. 540,652, Apr. 6, 1966, now abandoned. This application May 15, 1969, Ser. No. 824,905
Int. Cl. A47c 7/54; A47b 83/04
U.S. Cl. 297—429 **4 Claims**



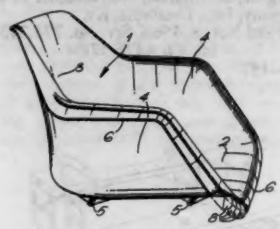
A wheelchair is provided with a footrest and an armrest at opposite sides thereof. The footrest and armrest on at least one side of the wheelchair are supported by a frame portion which is pivotable around an axis extending substantially perpendicular to an associated supporting surface, and locking means is provided to lock the frame portion in position. The frame portion includes two swingably interconnected parts along with means for adjusting the angle between the parts. The seat and backrest of the wheelchair are pivotable around an axis disposed adjacent the back of the seat and extending substantially parallel with an associated supporting surface.

3,574,400
POLYPROPYLENE ARMCHAIR

Robin Henry Day, Chelsea, London, England, assignor to S. Hille and Company Limited, Watford, Hertfordshire, England

Filed Aug. 9, 1968, Ser. No. 751,507
Claims priority, application Great Britain, Aug. 18, 1967, 38,211/67
Int. Cl. A47c 3/12, 7/16
U.S. Cl. 297—457 **2 Claims**

A unitary moulded chair shell forming the seat, back and arms of a chair, provided with a continuous integral rolled flange forming a channel extending along the under or rear side of at least the front edges of the arm and seal portions of

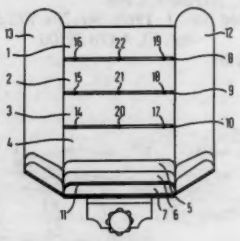


the shell, and having integral webs extending across said channel in the regions where the arms merge with the seat.

3,574,401
DRIVER'S SEAT FOR MOTOR VEHICLES

Wilhelm Lehner, Kummersbrucker-Strasse 6, Amberg, Oberpfalz, Germany

Filed Oct. 23, 1968, Ser. No. 769,966
Claims priority, application Germany, Oct. 23, 1967, P 16 30 736.1
Int. Cl. A47c 7/20, 7/14
U.S. Cl. 297—453 **16 Claims**

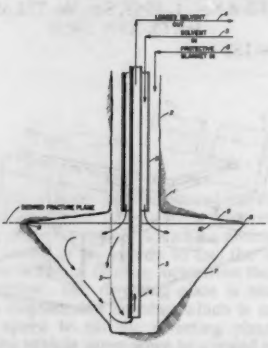


A driver's seat for motor vehicles, preferably for self-propelled implements, such as agricultural tractors, is provided with upholstery on the seat proper and on the backrest. The upholstery is composed of a plurality of independent individual pads.

3,574,402
FRACTURE INITIATION BY DISSOLVING A SOLUBLE FORMATION

J. G. Davis, II, and Russell W. Ankrom, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 18, 1969, Ser. No. 808,203
Int. Cl. E21b 43/28
U.S. Cl. 299—5 **4 Claims**



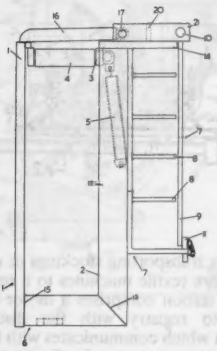
The point of fracture initiation in a soluble formation is controlled by dissolving from the formation a conical volume

having the base plane of the cone corresponding to the desired fracture plane. The conical volume is formed during the dissolving step by use of an immiscible blanket fluid above the solvent.

3,574,403
CARRIERS FOR LOOPED CABLES IN MINING INSTALLATIONS

Terence Hubbard, Langley Mill, England, assignor to Perard Engineering Limited

Filed Jan. 22, 1969, Ser. No. 792,940
Claims priority, application Great Britain, Jan. 26, 1968, Apr. 10, 1968, 04101/68; 17351/68
Int. Cl. E21c *29/04*
U.S. Cl. 299—19 **14 Claims**

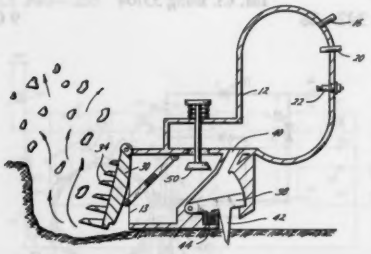


A carrier for looped cables used to supply power and water to mining machines which transverse to and fro along a mineral face. A number of carriers are attached to a spill plate or clevis rail each carrier having a pivotally mounted gate biased in a closed position. Looped cables can be enclosed within the bracket under the gate to avoid damage of the cables by, for example, flapping of a haulage chain.

3,574,404
DIGGING APPARATUS

Thomas J. Hogan, San Antonio, Tex., assignor to H. B. Zachry Company, San Antonio, Tex.

Filed May 12, 1969, Ser. No. 823,626
Int. Cl. E21c *29/00*
U.S. Cl. 299—37 **5 Claims**

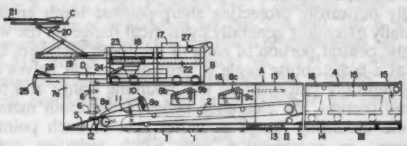


An improvement in an apparatus for creating repetitive explosions from an outlet of a combustion chamber by actuating a digging assembly by the explosive pressures to loosen and break up hard materials. The use of piston-driven digging teeth for loosening and breaking up material formations both prior to and simultaneously with material displacement by repetitive explosive blasts. An apparatus positioning locking assembly including a piston-driven pin actuated by the repetitive explosive blasts into position for holding the apparatus in position and which is actuated either prior to or simultaneously with the material displacement blasts and digging assembly actuation.

3,574,405
APPARATUS FOR CONTINUOUS EXCAVATION OF TUNNELS

Takao Shimada, Kanagawa-Ken; Tsutae Honma, Tokyo-to; Mamoru Minemoto, Tokyo-to, and Hiroshi Kinbara, Gifu-ken, Japan, assignors to Nippon Kokuyu Tetsudo, Tokyo-To, Japan

Filed Mar. 12, 1969, Ser. No. 806,491
Claims priority, application Japan, Mar. 15, 1968, 43/16508
Int. Cl. E21c *35/20;* **E01g** *3/06*
U.S. Cl. 299—64 **8 Claims**

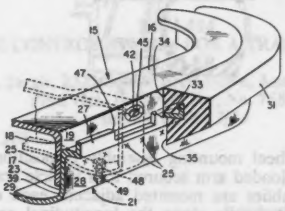


A method and apparatus for continuous excavation of tunnels characterized in that: the front portion of a channel-shaped main structure of the apparatus, having a U-shaped cross section and consisting of side plates and a bottom plate, is allowed to advance to a confronting position to the facing of the tunnel; a drilling device freely movable on the upper part of the apparatus is advanced along the length of the main structure so that holes are bored in the facing of the tunnel to accommodate explosives; after detonation of the explosives, a mucking device provided on the front part of the main structure removes the resulting muck rearwardly; conveyors transport the muck through the main structure; and the main structure is again advanced forwardly for further mucking and drilling holes in the facing of the tunnel.

3,574,406
ELASTOMERICALLY COVERED BUMPER

Henry W. Wessells, III, Paoli, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 11, 1968, Ser. No. 783,085
Int. Cl. B60r *19/08;* **B61f** *19/04;* **B63b** *59/02*
U.S. Cl. 293—71 **6 Claims**

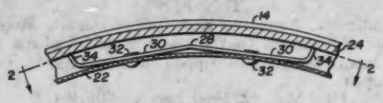


Bumper structure having a top member welded to a bottom member with an outstanding flange for securing a resilient rubber facing strip which contacts the outer surfaces of the members. The top and bottom members are welded so that moisture which may bleed from the weld construction drains along the inner surface of the bottom member. The formation of rust streaks on the chrome outer finish is thereby minimized.

3,574,407
WHEEL COVER

Howard E. Oathout, Grendada, Miss., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 20, 1969, Ser. No. 835,071
Int. Cl. B60b 7/06
U.S. Cl. 301—37 11 Claims

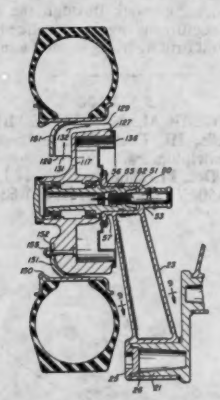


A wheel cover for a conventional automotive wheel including an axially extending cylindrical mounting flange supporting a plurality of circumferentially extending metal tooth members formed to provide at each end a generally radially outwardly projecting sharp-pointed tooth engaging an axially extending generally cylindrical flange on the wheel rim, the central portion of each of the tooth members being bent at a large obtuse angle to provide two flat halves each being centrally tangential to the mounting flange and being secured thereto, the clearance between the tooth members and the mounting flange at either side of such points of tangency, in combination with width reducing cutouts preferably provided in the tooth members intermediate the points of tangency, permitting flexing and twisting of the tooth members to facilitate installation of the wheel cover on the wheel and prevent removal of the wheel cover.

3,574,408
VEHICLE WHEEL MOUNTING ASSEMBLY

Adolph Ronning, 4826 E. Weldon Ave., Phoenix, Ariz.

Filed Oct. 1, 1968, Ser. No. 764,050
Int. Cl. B60b 35/06
U.S. Cl. 301—132 5 Claims

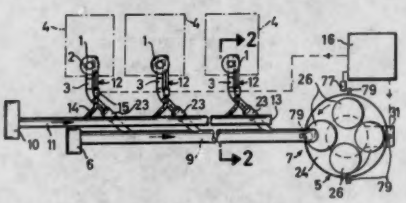


A vehicle wheel mounting assembly is positioned on a pivoted spring-loaded arm secured to a vehicle frame. Two identical assemblies are mounted adjacent each other but displayed longitudinally along the longitudinal axis of the vehicle. The assembly is reversible and is therefor interchangeable without variation. The wheel mounting assembly includes a wheel spindle carrier formed integrally at one end of one of the spring-loaded pivoted arms. The spindle carrier includes at the end remote from the vehicle frame an opening extending therethrough having an axis substantially horizontal and extending substantially transverse to the longitudinal axis of the vehicle. A wheel spindle is inserted in one end of the opening in the spindle carrier and includes a shoulder for abutting the periphery of the opening. An ejector shaft extends into the carrier from the opposite end and threadedly engages the wheel spindle. The spindle supports wheel bearings and a hub including a brake drum thereon to which a wheel and tire may be secured.

3,574,409
APPARATUS FOR TRANSPORTING TEXTILE GOODS OR THE LIKE

Joachim Furstenberg, Esslingen, Germany, assignor to LTG Lufttechnische Gesellschaft Mit Beschrankter Haftung, Stuttgart, Zuffenhausen, Germany

Filed Sept. 16, 1968, Ser. No. 760,001
Claims priority, application Germany, Sept. 22, 1967, P 15 56 604.8
Int. Cl. B65g 53/00
U.S. Cl. 302—2 18 Claims

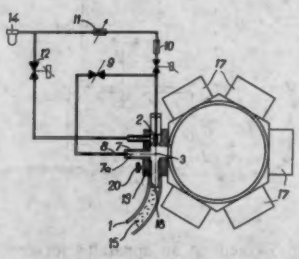


Apparatus for transporting stockings or other textile goods from one or more textile machines to a series of receptacles at a collecting station comprises a motor which indexes the receptacles into registry with the discharge end of a pneumatic duct which communicates with feed conduits each of which can receive goods from one output of a corresponding machine and is normally sealed by a one-way valve. Injectors cooperate with the feed conduits to admit into such conduits compressed air which can cause opening of one-way valves and delivery of goods from the corresponding machines into the duct for transfer into a selected receptacle. The pressure of air in the duct is less than the pressure of air which is admitted by the injectors. The injectors can be grouped, and their operation is regulated by a single control unit which also regulates the operation of the indexing motor for the receptacles.

3,574,410
PNEUMATIC CONVEYER SYSTEM

Karl Buschor, St. Gallen, Switzerland, assignor to Gema AG Apparatebau, St. Gallen, Switzerland

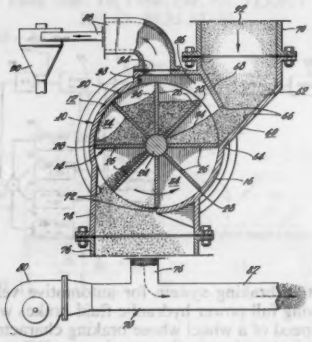
Filed May 5, 1969, Ser. No. 821,712
Claims priority, application Austria, May 6, 1968, A4319/68
Int. Cl. B65g 53/04
U.S. Cl. 302—28 9 Claims



A pneumatic conveyor system particularly intended for feeding pulverulent and granular coating materials to electrostatic spraying devices. The coating material is supplied from a loading hopper and a distributing chamber to a plurality of diffusors to which a propellant gas is supplied.

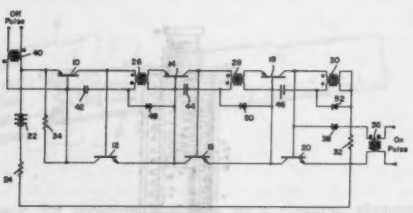
The diffusors are arranged circumferentially about the distributing chamber and each diffusor is connected to a separate conveyor line leading to an individual spraying device for simultaneous operation of a plurality of spraying devices.

3,574,411
SIDE INLET ROTARY VALVE
Claude J. Miller, Muncy, Pa., assignor to Sprout, Waldron & Company, Inc., Muncy, Pa.
Filed Jan. 15, 1969, Ser. No. 791,434
Int. Cl. B65g *53/40*
U.S. Cl. 302—49 **4 Claims**



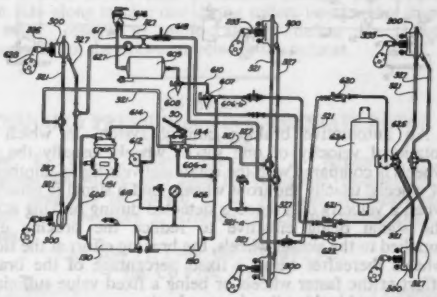
A side inlet rotary valve for delivery of particulate material into a pneumatic conveyor system characterized by a vane-type rotor mounted for rotation about a horizontal axis in a generally cylindrical casing; the casing includes a downwardly opening outlet port connected to the pressurized system, a side inlet for introducing the material into the rotor chambers, and a pressure relief port above said side inlet for relief of pressure carried by the rotor chambers into the inlet region.

3,574,412
CAPACITOR-TRANSFORMER VOLTAGE EQUALIZATION NETWORK FOR SERIES CONNECTED TRANSISTOR SWITCHES
Joe V. Stover, and Thomas J. Fox, Fullerton, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed June 6, 1968, Ser. No. 735,097
Int. Cl. H03k *17/00, 1/12*
U.S. Cl. 302—255 **8 Claims**



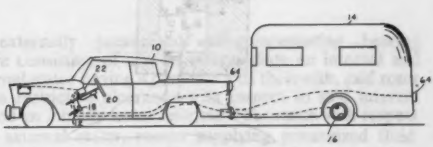
During the turnoff transition of series connected complementary transistor pair switches against a voltage in excess of the permissible standoff voltage of any one switch, it becomes necessary to equalize the voltage drop across each switch. Such equalization is accomplished by connecting a capacitor between the collector and base of each transistor in a complementary pair switch, with the capacitor having a larger displacement current than the collector current of that transistor. In this way, the rate of change of the collector to base voltage is maintained substantially equal between the several series connected transistors. This maintains substantially equal standoff voltage in each transistor during rise and fall times, providing transistor storage times are equal and turnoff signals are received at the same time. In order to overcome this potential cause of excessive voltage against any complementary pair transistor switch, pulse transformers are connected with one coil in series with the capacitor and the other coil in series with the emitter of the majority current carrying transistor so that the capacitive displacement current provides a voltage pulse in series aiding with the base-to-emitter voltage of the minority current carrying transistor to slow the transition speed of the succeeding complementary transistor pair switch first turning off and to allow its transition speed to approach that of the slower transition speed switch elements.

3,574,413
BRAKE SYSTEM FOR VEHICLES
Arthur B. Euga, 728 ½ Franklin Ave., Columbus, Ohio
Continuation of application Ser. No. 788,480, Jan. 6, 1959, now abandoned , which is a division of application Ser. No. 564,315, Feb. 8, 1956, now Patent No. 2,871,827, which is a continuation-in-part of application Ser. No. 176,785, July 31, 1950, now abandoned. This application Apr. 29, 1963, Ser. No. 282,525
Int. Cl. B60t *13/36*
U.S. Cl. 303—7 **2 Claims**



A dual reservoir airbrake system wherein both a main fluid pressure system and an auxiliary fluid pressure system can supply pressure to a first and second movable wall motor. The disclosure particularly relates to brake systems where valve-protected reservoir pressure supplant each other to produce from such a motor push rod pressure when the main or auxiliary brake pressure system becomes disabled failing temporarily or completely.

3,574,414
BRAKE CONTROL SYSTEM FOR A TRACTOR DRAWN TRAILER
Keith D. Jacob, 2321 South Circle Drive, Ann Arbor, Mich.
Filed Oct. 16, 1968, Ser. No. 768,062
Int. Cl. B60t *13/74*
U.S. Cl. 303—7 **8 Claims**



The electric brakes of a tractor drawn trailer are controlled by a force sensor so positioned that pressure applied by the foot of the driver during actuation of the tractor brake pedal also operates the sensor. The electrical

system thus activated is independent of the tractor braking system. Solid state devices are used in preference to switches or contractors, and included are effective means for voltage control. Such arrangement provides adjustable braking force proportional to the tractor braking force, relative braking adjustment, variable maximum braking, and automatic operation after adjustment.

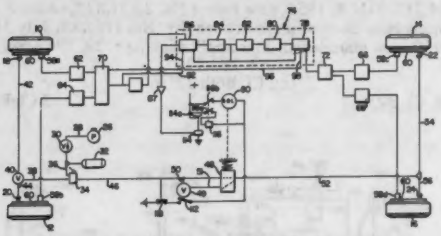
ERRATUM

For Class 303—21 see:
Patent No. 3,574,426

3,574,415
BRAKE SYSTEM

Alex F. Stamm, Rochester, Mich., assignor to Rockwell-Standard Company, Pittsburgh, Pa.

Filed Aug. 26, 1968, Ser. No. 755,076
Int. Cl. B60t 8/08
U.S. Cl. 303—21 9 Claims

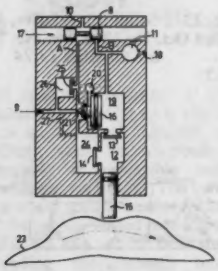


An automotive braking control system in which the rotational velocity of one set of wheels, usually the rear wheels is compared with the rotational velocity of another set of wheels, usually the front wheels, and a signal is generated when a velocity difference is detected during braking action, the signal being effective to reduce the braking effort supplied to the slower wheels, the braking effort at the slower wheels thereafter being a fixed percentage of the braking effort at the faster wheels or being a fixed value sufficiently low to avoid locking the slower wheels.

3,574,416
ANTILOCK BRAKE SYSTEMS

Derek Robert Skoyles, East Grinstead, England, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,561
Claims priority, application Great Britain, Oct. 31, 1967, 49462/67
Int. Cl. B60t 8/02
U.S. Cl. 303—21 3 Claims

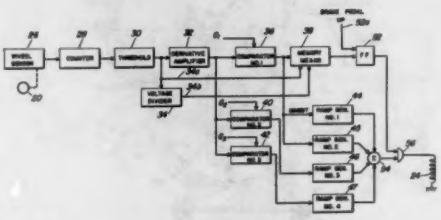


An antilock hydraulic brake control system for a wheeled vehicle. A first control valve actuated by a wheel speed-reduction sensor in response to wheel locking, operates to relieve the pressure in the brake cylinder by diverting the brake fluid to a reservoir, which fluid closes a second valve controlling the hydraulic flow from the master cylinder. Upon resumption of the wheel rotation a scavenging pump in communication with the reservoir, will be activated and the fluid pressurized by the pump will open the second valve so as to permit hydraulic pressure from the master cylinder to be reapplied to the brake cylinder.

3,574,417
FULL POWER ADAPTIVE BRAKING SYSTEM FOR USE WITH A PROPORTIONAL SOLENOID

Donald W. Howard, South Bend, Ind., and Ralph W. Carp, Baltimore, Md., assignors to The Bendix Corporation

Filed May 13, 1969, Ser. No. 824,173
Int. Cl. B60t 8/08
U.S. Cl. 303—21 37 Claims

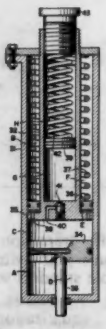


An adaptive braking system for automotive vehicles and the like having full power hydraulic fluid brakes wherein the rotational speed of a wheel whose braking characteristics are to be controlled is electrically sensed and a DC voltage level proportional to wheel acceleration derived therefrom in an adaptive braking system control channel. Wheel acceleration is compared to various reference levels corresponding to predetermined values of wheel acceleration so as to generate error signals. The error signals are applied to voltage ramp generators which are thus energized to generate ramp voltages across a normally open proportional solenoid valve. The solenoid valve is interposed in the hydraulic fluid line between the braking system control valve and the controlled wheel and in response to the ramp voltages acts to modulate the hydraulic fluid pressure transmitted by the braking system control valve to the wheel brake cylinders.

3,574,418
SHOCK ABSORBER FOR ENDLESS-TRACK-TYPE TRACTORS AND THE LIKE

Nobuya Okabe, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo-To, Japan

Filed Feb. 7, 1969, Ser. No. 797,638
Claims priority, application Japan, Feb. 7, 1968, 43/7162
Int. Cl. B62d 55/30
U.S. Cl. 305—10 10 Claims



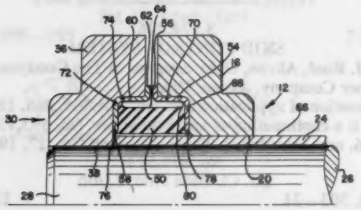
A shock absorber for the endless track of a vehicle providing three oil cylinders, namely, an actuating cylinder

responsive to shock motion, a shock-absorbing cylinder and a tension-adjusting cylinder and means for controlling the flow of fluid to these cylinders so that when any shock motion is applied to the actuating cylinder, the oil within the oil-filled chamber of the cylinder is forced to flow into the shock-absorbing cylinder, whereby the shock motion can be absorbed; whereas, if the endless track becomes loose, the oil within the oil-filled chamber of the tension-adjusting cylinder is forced to flow into the oil-filled chamber of the actuating cylinder, whereby the tension of the endless track belt can be recovered.

3,574,419
TRACK PIN SEAL

Seymour A. Hatch, Maywood, Ill., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.

Filed Mar. 14, 1968, Ser. No. 713,077
Int. Cl. B62d *55/20*
U.S. Cl. 305—11 **4 Claims**

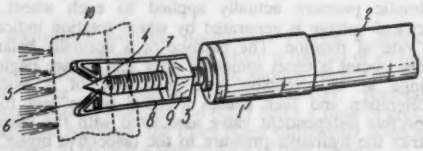


A protective seal unit for retaining grease in, and excluding abrasive particles from a track pin connecting two or more links, which, when connected together, form an endless crawler track for a track-laying vehicle. The seal includes first and second collar members, each having radially and axially extending flanges and an elastomeric torsional deflection sealing element extending between the two radially extending flanges, connecting the two collars, and being spaced apart from the axially extending portions of the collars. Each collar is held in fixed relation relative to the link member with which it is associated, and the links are oscillated in relation to each other when the track moves over a drive sprocket or an idler.

3,574,420
DEVICE FOR SECURING HANDLES TO CLEANING ELEMENTS OR THE LIKE

Ladislao Waldmann, Pontela 2968, Buenos Aires, Argentina

Filed July 30, 1969, Ser. No. 846,175
Int. Cl. B25g *3/20*
U.S. Cl. 306—29 **1 Claim**

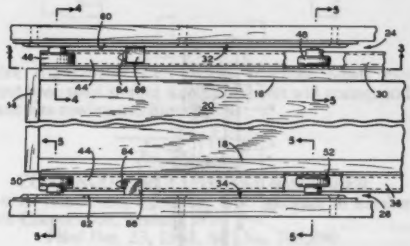


A device for securing a handle to a cleaning element provided with a cavity in which a threaded stem having a tapering free end projects coaxially fixed from the handle and engages between inwardly bent free end portions of a pair of opposite flexible arms fixed at the other ends thereof to a nut threadingly connected to the stem so that the arms may be radially expanded in the region of the free end portions thereof during rotation of the stem and the nut relative to each other in one direction to thereby connect the handle to a cleaning element when said end portions during such rotation are located in a cavity of the cleaning element.

3,574,421
DRAWER SLIDE ASSEMBLY

Robert R. Stein, Mamaroneck, and Stanley H. Coe, Sloatsburg, N.Y., assignors to Instrument Systems Corporation, Nyack, N.Y.

Filed Aug. 27, 1969, Ser. No. 853,323
Int. Cl. A47b *88/04*
U.S. Cl. 308—3.8 **10 Claims**

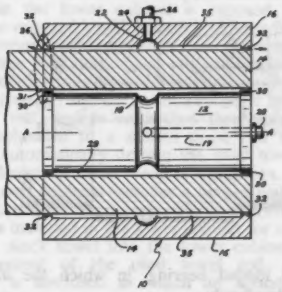


A drawer slidably coupled to a cabinet by drawer slides which do not jam or bind when subjected to offcentered opening or closing forces, each drawer slide coupling a side of the drawer to the case or cabinet through two rollers which ride along tracks; one of the rollers being wider than the other rollers to more clearly define the axial displacement of the drawer relative to the cabinet.

3,574,422
EXTERNALLY PRESSURIZED INTERMEDIATE ROTOR STRUCTURE

Harold E. G. Arneson; Theodore J. Arneson, Jr., Minneapolis, Minn., and John H. Whitmore, Binghamton, N.Y., assignors to Harold E. G. Arneson, Minneapolis, Minn. and Theodore J. Arneson, Jr., South Minneapolis, Minn.

Filed July 11, 1969, Ser. No. 840,943
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **7 Claims**

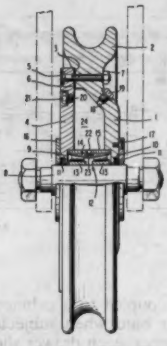


An externally pressurized self-compensating bearing structure consisting of a rotor intermediate an internal and an external stator having a common axis therewith, said rotor having a restrictive clearance with respect to said internal stator and an initially lesser restrictive clearance with respect to said external stator, means supplying pressurized fluid through said stators to said clearances whereby in operation said rotor by centrifugal expansion rows to increase said first-mentioned clearance beyond a suitable working clearance and to reduce said second-mentioned clearance to a suitable working clearance.

3,574,423
SHEAVE WITH LUBRICANT RESERVOIR

John Stevenson Thomson, 104 Forsyth St., Greenock, Scotland

Filed May 5, 1969, Ser. No. 822,061
Claims priority, application Great Britain, May 4, 1968, 21,228/68
Int. Cl. F16c *13/00*
U.S. Cl. 308—18 2 Claims

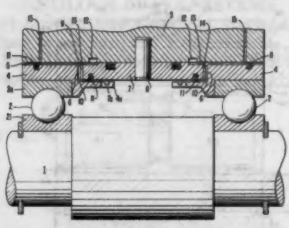


A circular dished member having a grooved rim and provided with a circular cover enclosing the concavity of the dished member to form an annular reservoir for retaining a relatively large quantity of lubricant to be supplied to the centrally disposed bearing of the sheave formed by or held in position by the dished member and/or circular cover.

3,574,424
AXIALLY LOADED BEARING

Klaus Hagemeister, Munchen-Pasing, Germany, assignor to M. A. N. Turbo G.m.b.H., Munich-Allach, Germany

Filed Feb. 20, 1969, Ser. No. 800,841
Claims priority, application Austria, Feb. 23, 1968, A1759/68
Int. Cl. F16c *33/00*
U.S. Cl. 308—189 11 Claims



An axially loaded bearing, in which the axial load is produced hydraulically.

3,574,425
FABRICATION OF HOLLOW BALLS, FOR USE AS BALL BEARINGS, FROM POWDER

Henry A. Johnson, 624 Daleview Ave., Dayton, Ohio, and Gabe L. Campbell, Wayne Lakes Park, Greenville, Ohio

Filed June 25, 1969, Ser. No. 836,359
Int. Cl. F16c *19/20*
U.S. Cl. 308—200 5 Claims

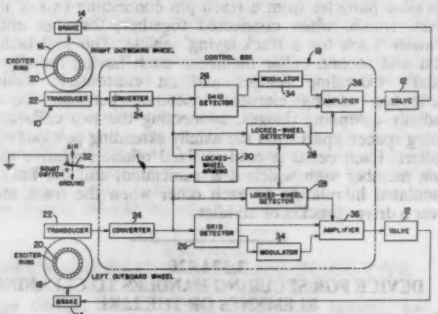
A hollow ball structure, for use in a ball bearing application, having two half shells constructed of powdered material made porous to absorb a lubricant therewithin to be automatically exuded onto the surface of the bearing and bearing races, and thereby provide a self-lubrication feature to the structure. The powdered ball bearing may be utilized

in a bearing assembly in alternate relation with both solid and other types of hollow ball structures to thereby provide both strength, flexibility and lubrication.

3,574,426
SKID CONTROL SYSTEM

Edgar J. Ruof, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 814,865, Jan. 16, 1969, which is a continuation of application Ser. No. 593,150, Nov. 9, 1966, now abandoned. This application Oct. 27, 1969, Ser. No. 871,512
Int. Cl. B60t *8/08, 13/66*
U.S. Cl. 303—21 21 Claims



An antiskid brake control system particularly designed for aircraft which includes a hydraulic braking pressure supply to each wheel with independent valves to adjustably restrict the hydraulic pressure actually applied to each wheel. An electrical voltage is generated by wheel rotation indicating the rate of rotation. The balance of a normally balanced bridge circuit is upset sometime after this voltage begins to change at an excessive rate indicative of a skidding deceleration and then causes a signal to be sent to the respective independent valve associated with the wheel to restrict the hydraulic pressure to the respective brake. The lag between the onset of a skidding deceleration and the time at which the balance of the bridge is upset directly depends upon the severity of the skid.

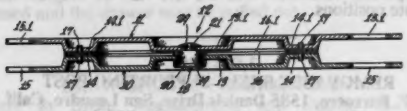
3,574,427
PIVOT CONSTRUCTION

James K. Faull, 16 Walker Court, Poland, Ohio

Filed Apr. 3, 1969, Ser. No. 813,250
Int. Cl. F16c *17/04*
U.S. Cl. 308—135 4 Claims

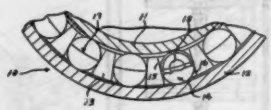
A pivot construction for a swivel device having a pair of platelike members in face-to-face relation relatively rotatable

about the pivot axis. The novel pivot construction includes a shouldered pivot pin anchored to one of the members and



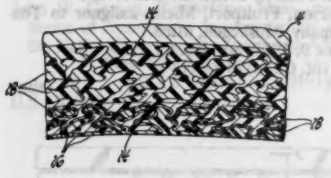
spaced from the other member by low friction bodies, one of which is keyed to the other member to insure unitary movement therewith.

3,574,428
FABRICATION OF HOLLOW BALLS, CONTAINING HEAT SINK MATERIAL, FOR BEARINGS
Henry A. Johnson, 8151 Inwood Ave., Dayton, Ohio, and Gabe L. Campbell, Wayne Lakes, Greenville, Ohio
Filed July 8, 1969, Ser. No. 839,931
Int. Cl. F16c *13/02*
U.S. Cl. 308—195 **7 Claims**



A hollow ball, or roller bearing structure fabricated from a pair of half shell members, each of which incorporates a heat sink for absorbing the heat developed during the operation of the bearing structure and thereby prolonging the bearing wear life capability.

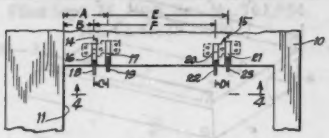
3,574,429
LOW FRICTION BEARING AND METHOD FOR MAKING SAME
Paul J. Reising, Birmingham, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed June 6, 1969, Ser. No. 831,066
Int. Cl. F16c *27/00;* **B29d** *7/20;* **E06b** *3/92*
U.S. Cl. 308—238 **22 Claims**



In accordance with the invention a bearing is provided with a low friction slide surface which is formed of an open-celled resin foam impregnated with another resin, one of the resins being of relatively high lubricity, preferably polytetrafluorethylene, and the other being a resin of greater strength and hardness, the foam being sufficiently filled and compressed to provide a slide surface of high density.

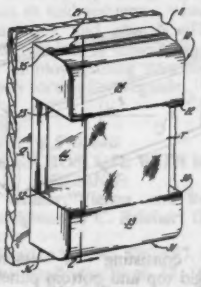
3,574,430
COMPOUND HINGE FOR CONNECTING SEWING MACHINE HEAD TO SEWING MACHINE CABINET
Manfred Merz, Montreal, Quebec, Canada, and John A. Fitzwater, Oak Park, Ill., assignors to Sears Roebuck and Co., Chicago, Ill.
Filed Nov. 26, 1969, Ser. No. 880,143
Int. Cl. A47b *81/00*
U.S. Cl. 312—21 **6 Claims**

A compound hinge for connecting a sewing machine head to a sewing machine cabinet having a top surface panel provided with a cutout opening suitable to receive a sewing machine head. The hinge is secured adjacent to the opening and includes a pair of pivotal elements which are adapted for



selective engagement with sewing machine heads having different base sizes so that a single cabinet will accommodate different size sewing machine heads.

3,574,431
CONTINUOUS ROLL TOWEL DISPENSER
Charles A. Henderson, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 23, 1968, Ser. No. 785,890
Int. Cl. B65h *19/00*
U.S. Cl. 312—38 **9 Claims**

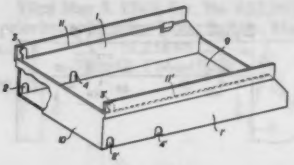


A continuous roll towel dispenser including an upper cabinet for housing a clean towel roll and a lower cabinet for housing a used towel roll. The two cabinets are vertically spaced from each other so that a length of towel extending from the clean towel roll in the upper cabinet to the used towel roll in the lower cabinet is exposed between the cabinets. The exposed length of towel between the cabinets is spaced a substantial distance away from the rear walls of the cabinets so that both sides of the exposed length of towel are readily accessible to the user. A first driving roll in the upper cabinet is driven in response to withdrawal of towel from the clean towel roll, and is connected through a chain and sprocket mechanism to a second drive roll in the lower cabinet for automatically driving the used towel roll each time a new length of clean towel is withdrawn. Each of the upper and lower cabinets includes a hinged wall portion for providing access to the towel rolls contained therein. A takeup rod is included in the lower cabinet for automatically drawing any slack towel into the lower cabinet after each driven movement of the used towel roll. A modified embodiment is disclosed in which an actuator must be operated by the user to permit the withdrawal of clean towel, and the length of towel that can be withdrawn following each operation of the actuator is limited to a predetermined length.

3,574,432
ARTICULATED JOINT-CONNECTING STACKABLE FILE TRAYS
Robert Hansmann, Kleistgasse 21, Vienna, Austria
Filed Feb. 27, 1969, Ser. No. 802,869
Int. Cl. F16b *12/00*
U.S. Cl. 312—111 **7 Claims**

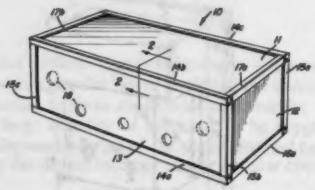
A stackable file tray assembly wherein the trays are fitted within one another. The upper edges of the longitudinal walls

of each tray have, toward their rear wall, heads projecting from the ledges designed to support the next higher tray.



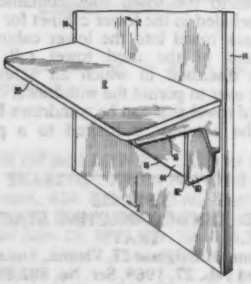
These heads are received in recesses formed in the lower edges of the longitudinal walls to allow the upper trays to pivot on the lower trays.

3,574,433
CABINET
Robert C. Bell, Centereach, N.Y., assignor to Eico Electronic Instrument Co., Inc., Brooklyn, N.Y.
Filed Mar. 13, 1969, Ser. No. 806,791
Int. Cl. A47b *47/00, 87/02*
U.S. Cl. 312—111 **8 Claims**



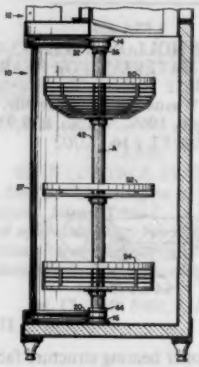
A cabinet consisting of essentially rectangular, substantially rigid top and bottom panels; four substantially rigid side panels; and, as the sole means for supporting the panels, a plurality of relatively nonelastic, essentially rigid connecting elements, each having two longitudinally extending grooves into which two edges of the respective adjacent bottom and side, top and side, and pairs of side panels are removably force fit.

3,574,434
DESK WITH SLIDABLE TOP
Robert L. Propst, Ann Arbor, and Peter J. Protzmann, Grand Rapids, Mich., assignors to Herman Miller Inc., Zeeland, Mich.
Filed Nov. 13, 1968, Ser. No. 775,267
Int. Cl. A47f *5/08;* **A47b** *27/00*
U.S. Cl. 312—245 **1 Claim**



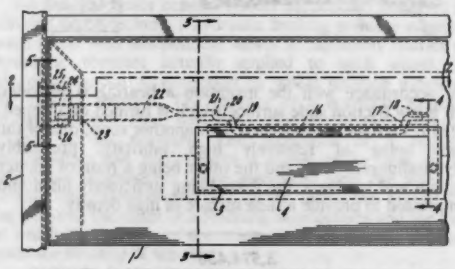
This disclosure relates to a desk assembly in which a support such as wall hung brackets mounts an open top bin in a desk top. The desk top is slidably fixed to the support through opposing U-shaped channels having ball bearings therebetween. The bin is supported beneath the desk top so as to permit access thereto by sliding the top between alternate positions.

3,574,435
REMOVABLE SHELF-SUPPORTING POST
Louis F. Barroero, 1585 Daniels Drive, San Leandro, Calif.
Filed Nov. 29, 1968, Ser. No. 780,146
Int. Cl. A47b *49/00*
U.S. Cl. 312—305 **1 Claim**



For use in a display case or the like, a vertical tubular post is disposed and supported therein by a member downwardly extending from the top of the case into the top of the post, and a member upwardly extending from the bottom of the case into the bottom of the post. The post may be removed from the case by moving it axially upward until the bottom end thereof is free of the associated upwardly extending member, and then swinging the bottom end thereof laterally. Means are included for selectively limiting the axial upward movement of the post when it is supported within the case.

3,574,436
LATCH FOR FILING CABINET DRAWER
Clarence A. F. Anderson, Fruitport, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.
Filed June 9, 1969, Ser. No. 831,579
Int. Cl. A47b *88/00*
U.S. Cl. 312—320 **7 Claims**



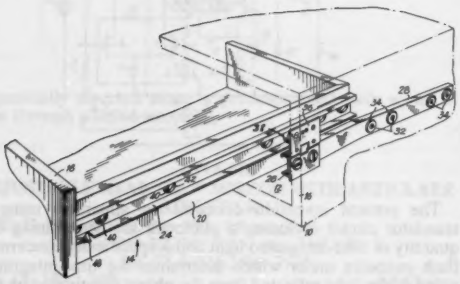
In the front of a filing cabinet drawer is an open flush type handle defining a handhole into which the user may insert his fingers to pull the drawer out. A finger member extends longitudinally across the top of the handle in the handhole and may be pressed upward by the fingers of the user to raise a latch actuating element which extends from the handhole to one side of the drawer. The latch actuating member carries a latch so related to a strike on the wall of the cabinet

that, when the drawer is pushed home, the latch member rides up on the strike and then drops down to lock the drawer in place. When the latch member is pressed upwardly by the fingers of the user in the handhole, the latch is released and the drawer may be pulled out.

3,574,437
DRAWER SLIDE CONSTRUCTION

Robert R. Stein, Mamaroneck, and Stanley H. Coe, Sloatsburg, N.Y., assignors to Instrument Systems Corporation, New York, N.Y.

Filed Feb. 14, 1969, Ser. No. 799,404
Int. Cl. A47b *88/00, 95/00*
U.S. Cl. 312—341 10 Claims

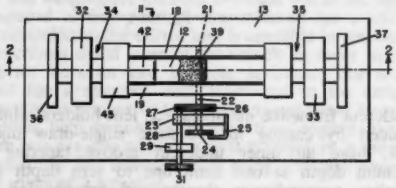


A self-closing slideable drawer is provided with tracks on each side having a roller vertically offset from its track adjacent its rear, which roller cooperates with a corresponding stationary track on each side of the cabinet, which tracks have a roller vertically offset therefrom adjacent its respective front, and which roller is received within its mating drawer track. One set of rollers on one side of the drawer has a smaller width than the other side, and the tracks have stops for in and out position of the drawer.

3,574,438
QUASI-OPTICAL MICROWAVE COMPONENT

John W. Carson, Cambridge, Mass., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 27, 1969, Ser. No. 802,818
Int. Cl. G02b *13/14;* H01p *1/22*
U.S. Cl. 350—1 21 Claims

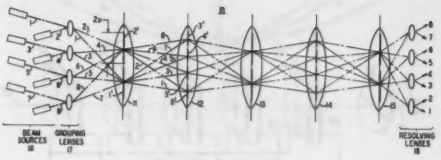


A quasioptical microwave component having a rotatably mounted dielectric body with input and output faces is disclosed. The dielectric body is adapted for connection in an oversize waveguide system such that polarized electromagnetic energy is incident on the input face at the Brewster angle. Rotation of the dielectric body in one direction attenuates the energy transmitted from the output face and rotation in the opposite direction produces a phase shift therein.

3,574,439
MULTIPLE BEAM TRANSMISSION SYSTEM

Detlef C. Gloge, Matawan, and Enrique A. J. Marcatili, Rumson, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 24, 1968, Ser. No. 761,954
Int. Cl. G02b *27/00*
U.S. Cl. 350—31 4 Claims

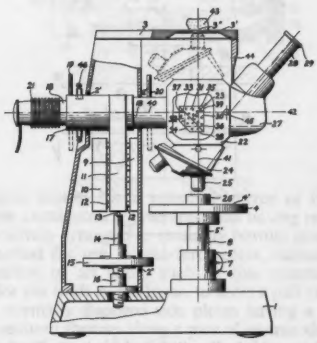


Special multiplexing of a plurality of N beams in a beam transmission system comprising a sequence of confocally spaced lenses is accomplished by directing the beams such that p separate groups of q beams are formed at odd lenses in said sequence of lenses, and q separate groups of p beams are formed at even lenses in said sequence, where p and q are integers greater than one and $p \times q = N$. The beams are resolved at the output end into N separate beams. A similar arrangement can be employed using nonconfocally spaced lenses or a continuously focusing waveguide.

3,574,440
INCIDENT LIGHT MICROSCOPE WITH ROTATABLE HOUSING

Fritz Dertina; Fritz Gabler, Vienna, and Roland Mitsche, Loeben, Austria, assignors to C. Reichert Optische Werke A.G., Vienna, Austria

Continuation of application Ser. No. 589,957, Oct. 27, 1966, now abandoned. This application Sept. 17, 1969, Ser. No. 866,838
Int. Cl. G02b *21/06*
U.S. Cl. 350—91 7 Claims

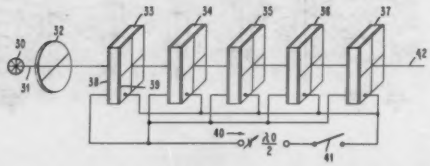


An incident light microscope permitting to view an object either from above or from below, in which the light source, the objective carrier and the elements for illuminating the object form a single unit which is turnable about an axis arranged parallel to and between a pair of support faces adapted to support an object to be viewed in the microscope and in which this axis coincides with the optical axis of part of the path of the viewing and part of the path of the illuminating rays.

3,574,441
ACHROMATIC POLARIZATION ROTATOR

Thomas J. Harris, Chestnut Hill, Mass., and Erhard Max, Sindelfingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1968, Ser. No. 778,186
Int. Cl. G02f 1/40
U.S. Cl. 350—150 6 Claims

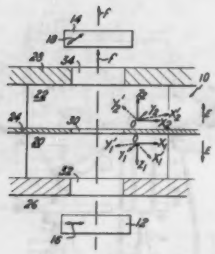


Apparatus is provided for effecting controlled alterations in the polarization of a multiwavelength beam of radiation. Plural stress responsive elements are arranged in cascade to receive the radiation from a source; the elements being arranged in differing predetermined directions with respect to the polarization of the radiation. Dependent on the stress applied to the elements, the apparatus is tunable for bandwidth response. When stress is applied, the apparatus operates to provide a second state of operation.

3,574,442
ELECTRO-OPTICAL PHASE DISPLACEMENT CELL

Maurice Michon, Draveil, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Feb. 27, 1969, Ser. No. 803,044
Claims priority, application France, Mar. 1, 1968, 142153
Int. Cl. G02f 1/26
U.S. Cl. 350—150 6 Claims

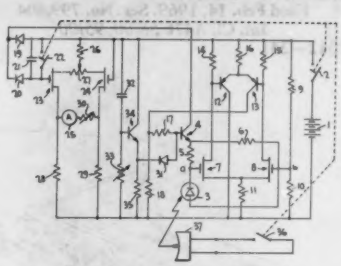


An electro-optical cell for the phase displacement of a polarized light beam comprising two single crystals which exhibit the Pockels effect, the crystals being disposed symmetrically with respect to a flat central electrode and enclosed between two flat lateral electrodes. The principal crystallographic axes of the single crystals are directed at right angles to the flat electrodes. The light beam to be displaced in phase passes through each single crystal in turn in the direction of the crystallographic axes. The cell also comprises a coaxial cable, the flat central electrode being inserted in the central conductor of the cable whilst the flat lateral electrode is inserted in the outer conductor of the cable.

3,574,443
APPARATUS FOR DETERMINING THE QUANTITY OF TIME-INTEGRATED LIGHT

Yasuhiro Nanba, Toyokawa-shi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Filed Feb. 7, 1969, Ser. No. 797,433
Claims priority, application Japan, Feb. 14, 1968, Mar. 18, 1968, June 19, 1968, 43/9505;43/21248;43/42452
Int. Cl. G01j 1/46
U.S. Cl. 356—215 6 Claims

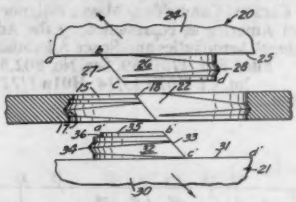


The present invention concerns an apparatus using a transistor circuit including a photocell for determining the quantity of time-integrated light and it specifically concerns a flash exposure meter which determines the time-integrated value of the light reflected from the object illuminated by the flash light or the incident light on the object.

3,574,444
FRAME USEFUL AS LENS SUPPORT

Richard D. Hipp, Jr., Circle Pines, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original application Aug. 28, 1968, Ser. No. 389,160, now Patent No. 3,431,967. Divided and this application July 9, 1968, Ser. No. 743,408
Int. Cl. G02b 7/02
U.S. Cl. 350—252 6 Claims



Undercut framelike members, e.g. lens holders, which are produced by casting in two-piece single-draw injection molds, have an inner undercut groove tapering from maximum depth at one centerline to zero depth at the centerline perpendicular thereto and provide for stable support and easy removal of the lens.

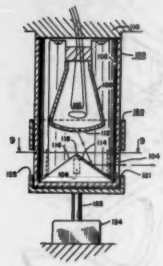
3,574,445
SOURCE OF RADIATION

Duane D. Harmon, Irondequoit, N.Y., assignor to Bausch & Lomb, Incorporated, Rochester, N.Y.

Filed Mar. 28, 1966, Ser. No. 537,773
Int. Cl. G02f 1/30
U.S. Cl. 350—272 3 Claims

A source of radiation generated from a single light source for optical comparison systems is provided wherein one or

more modulated light beams of substantially equal intensity is sequentially directed along a predetermined path so as to pass through a liquid sample.

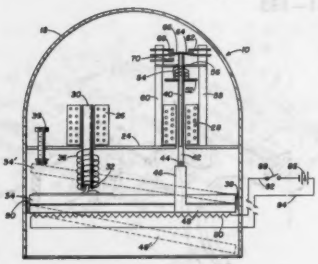


3,574,446

ADJUSTABLE REAR VIEW MIRROR WITH ANTIGLARE STRUCTURE

Willis D. Moore, P.O. Box 392, Athens, Tex.

Filed Oct. 22, 1968, Ser. No. 769,487
Int. Cl. G02b 5/08, 7/18
U.S. Cl. 350—283 14 Claims



A vehicle mirror assembly assembly having daytime and nighttime positions which are variable in response to operation of the directional signal lever of the vehicle. A support is provided for attachment to the vehicle, with a mirror and an antiglare member mounted within the support upon spaced vertical axes. A first solenoid has a solenoid shaft connected to the mirror and is operable in response to the directional signal lever of the vehicle in order to move the mirror between two extreme positions. The second solenoid has a solenoid shaft connected to the antiglare member and is responsive to the directional signal lever and the vehicle light switch for moving the antiglare member between two extreme positions. Switch structure is provided to prevent the first solenoid from being actuated when the second solenoid is actuated.

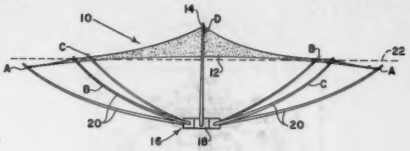
3,574,447

MULTICURVED REFLECTOR

Fredrick R. Ruble, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Feb. 17, 1969, Ser. No. 799,853
Int. Cl. G02b 5/10
U.S. Cl. 350—293 4 Claims

The invention relates to a reflecting surface with a prescribed complex curvature achieved without the use of internal pressurization-, inflation-, or rigidization-dependent techniques. The reflector is a one-sheet hyperboloid or some other similar smoothly varying curved sheet containing both convex and concave elements at every point on its surface. The surface is achieved by the proper tensioning and positioning of the sheet around its periphery.

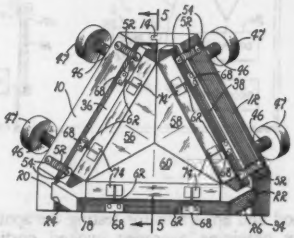


3,574,448

ADJUSTABLE MOUNT FOR A TRIHEDRAL MIRROR

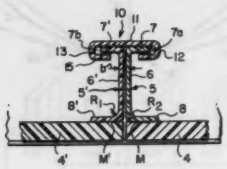
T. O. Paine, Deputy Administrator of the National Aeronautics and Space Administration in respect to an invention of; Harry W. Petersen, Oakland, and Raymond O. Laurie, Sand Leandro, Calif.

Filed May 13, 1969, Ser. No. 824,042
Int. Cl. G02b 5/08
U.S. Cl. 350—310 5 Claims



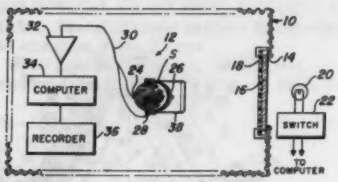
An adjustable mount for a trihedral mirror of the type including three contiguous mirror segments having reflecting surfaces operatively arranged in mutually normal planes and particularly suited for use in interferometers, characterized by the utilization of an alloy, such as that commercially available under the trade name Invar, to form a pair of rigidly coupled and normally disposed side plates having a bottom plate fixedly secured thereto along a pair of intersecting edge portions. Each of the side plates adjustably supports a backup plate through screw-threaded adjusting screws, also of Invar, and a plurality of tension springs connected therebetween, with each backup plate, as well as the bottom plate, being provided with a plurality of extended and tensioned links of music wire joined at spaced intervals to the edge surfaces of an adjacent mirror segment in a manner such as to preclude an interruption of impinging beams of light, whereby each of the mirror segments can be adjusted by manipulating the adjusting screws, while heat-induced error is rendered negligible, so that the reflecting surfaces may be adjusted to assume a fixed, mutually normal relationship with minimum deviation error.

3,574,449
SEAM LOCK FOR INDIVIDUAL PLASTIC FACE PANELS OF INTERNALLY ILLUMINATED SIGN BOX
Jerome Rosenberg, 11 Staulies Drive, Plainview, N.Y.
Filed Apr. 29, 1969, Ser. No. 820,123
Int. Cl. G02b 5/00, 27/00; E04c 1/30
U.S. Cl. 350—319 12 Claims



A channel seam lock for removably securing together panels of an internally illuminated sign box or the like.

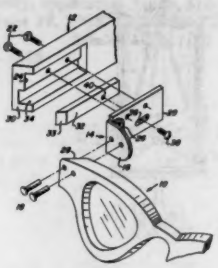
3,574,450
METHOD AND APPARATUS FOR DETERMINING THE EFFECTIVENESS OF SPATIAL VISION
Carroll T. White, 3321 Poe St., San Diego, Calif., and Melvin R. Harter, 809 Courtland St., Greensboro, N.C.
Filed May 19, 1969, Ser. No. 825,596
Int. Cl. A61b 3/02
U.S. Cl. 351—17 13 Claims



A method and apparatus for testing the spatial vision of a subject by obtaining averaged evoked cortical responses produced by various patterned stimuli; and by obtaining such responses produced by a subject observing a given pattern through a graded series of ophthalmic lenses. The amplitude of certain components of the evoked cortical response, occurring at specific times following the brief illumination of such patterns, vary directly with the degree of clarity of the perceived images produced by these patterns. The degree of refractive error, and other aspects of a subject's visual characteristics, can thus be determined by finding the conditions that produce the maximum amplitudes of those specific components of the evoked response.

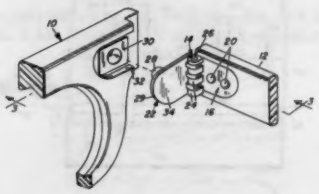
3,574,451
SPECTACLE FRAME
Achille Lazazzera, 46 Moherman Ave., Youngstown, Ohio
Filed June 12, 1969, Ser. No. 832,619
Int. Cl. G02c 5/14, 5/20
U.S. Cl. 351—121 5 Claims

A novel hinge structure is disclosed for attaching the temples to the frontal lens carrying frame of a spectacle frame. The hinge structure comprises a pair of pivotally connected tongue members, one of which is attached to a temple and the other of which is attached to an end portion of the frontal lens carrying frame such that the temple is adapted to move pivotally both outwardly and inwardly relative to the frontal lens carrying frame. A slide member is associated with one of the tongue members of the hinge structure and is adapted to



be moved and held in a desired one of a plurality of positions to limit the extent of outward pivotal movement of the temple relative to the frontal lens carrying frame.

3,574,452
BREAKAWAY TEMPLE HINGE MOUNTING FOR SPECTACLE FRAME
Stuart Louis McLendon, 5802 E. 30th St., and Joseph Robert Hanson, 2573 E. Alto Vista, Tucson, Ariz.
Filed May 5, 1969, Ser. No. 821,619
Int. Cl. G02c 5/14, 5/22
U.S. Cl. 351—153 5 Claims

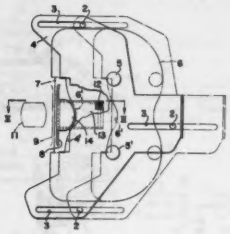


The subject invention relates to a breakaway hinge mounting for spectacles which permits the temple piece to break away from the lens frame under an impact. The hinge includes a side leaf rigidly secured to the temple piece, a front leaf pivotally secured to the side leaf, a gripper rigidly secured to the front leaf and a securing member embedded in the lens frame for engaging the gripper, thereby preventing rotation of the temple member and permitting the temple piece to break away from the lens frame when the spectacle hinge is subjected to an external force.

3,574,453
RETRACTABLE MIRROR MEANS FOR CARTRIDGE-TYPE MOTION-PICTURE PROJECTOR
Teruei Hara, Ohmiya-shi, Japan, assignor to Fuji Shashin Koki Kabushiki Kaisha, Ohmiya-shi, Saitama-Ken, Japan
Filed Mar. 22, 1968, Ser. No. 715,322
Claims priority, application Japan, Mar. 28, 1967, 42/25102
Int. Cl. G03b 23/02
U.S. Cl. 352—72 2 Claims

A cartridge-type motion-picture projector comprises a frame and a film cartridge supporting plate mounted on the frame and movable in a fore-and-aft direction. Light from a

light source enters the projector in a direction transversely thereof and is reflected by a mirror which is retracted when

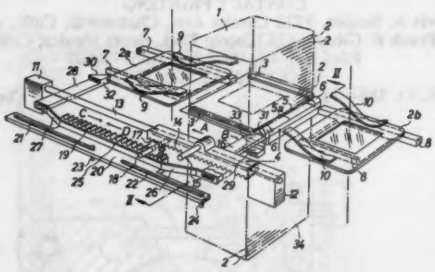


the cartridge supporting plate is in a forward position and projected into an operative position when the cartridge supporting plate is in a backward position.

3,574,454
SLIDE PROJECTOR

Karl Deeg, Unterhaching, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 18, 1968, Ser. No. 745,870
Claims priority, application Germany, July 20, 1967, P 15 72 546.9
Int. Cl. G03b *23/14*
U.S. Cl. 353—114 **13 Claims**



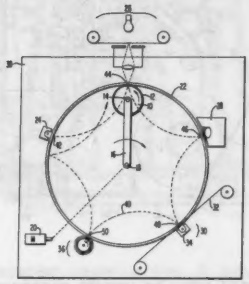
A slide projector wherein a reciprocable slide changer alternately transports lowermost slides from a centrally located tray to two projecting stations by moving the slides in a first plane which is parallel to the common plane of the projecting stations. Springs cause the thus transported slides to move from the first into the second plane and clamp the slides in registry with the respective stations. An evacuating device is reciprocable in response to reciprocation of the slide changer to remove slides from stations which are about to receive fresh slides and to transport the thus removed slides into a collecting receptacle wherein the slides are stacked in the same order in which they are being removed from the tray.

3,574,455
HIGH SPEED ELECTROSTATIC PRINTER

Arthur L. Mix, Jr., Lexington, and David C. Evans, Jr., Knoxville, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1968, Ser. No. 729,304
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 **9 Claims**

Apparatus for achieving high speed electrostatic printing rates by utilization of a continuously rotating planetary drum drive mechanism. The invention consists of apparatus for causing a point on the surface of the drum to move with

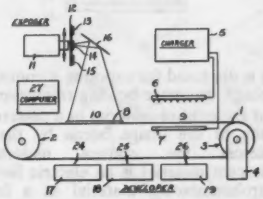


apparent intermittent motion past various functional stations in an electrostatic printing process.

3,574,456
APPARATUS FOR PRODUCING ELECTROPHOTOGRAPHIC COPIES

Archie R. Grace, Collinswood, South Australia, assignor to Ricoh Co., Ltd., Nakamagome, Ohta-Ku, Tokyo, Japan

Filed Oct. 10, 1967, Ser. No. 674,241
Claims priority, application Australia, Oct. 18, 1966, 12,731
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **8 Claims**



Apparatus for electrophotographic sequential color printing by returning the sensitizable paper to the starting position a required number of times and exposing and developing with different color conditions each time, and an applicator for the developer. An exposure station and a developer station are provided and timing means select the color exposure and development.

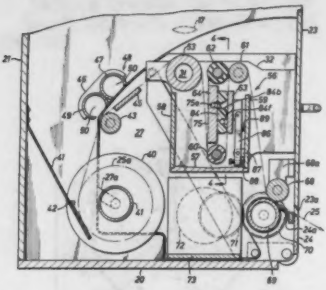
3,574,457
ELECTROSTATIC CAMERA

Clyde M. Slavens, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 3, 1968, Ser. No. 764,672
Int. Cl. G03g *9/04*
U.S. Cl. 355—10 **8 Claims**

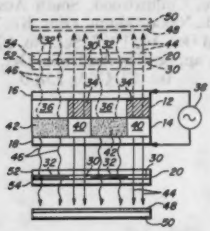
An electrostatic copy apparatus including a cabinet with an upright container mounted therein. The upright container

is connected to a front panel on the cabinet which can be pulled forward for providing access to the upright container.



Paper is directed into the upright container and a liquid applicator applies liquid to the paper.

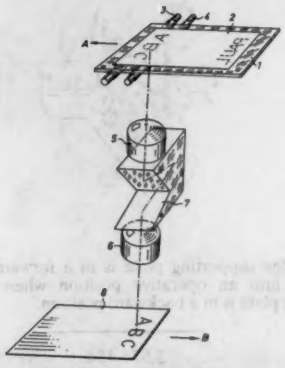
3,574,458
APPARATUS AND METHOD FOR MODIFYING CONTRAST IN PHOTOGRAPHIC IMAGES
Hollis Edward French, North Chelmsford, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 8, 1968, Ser. No. 719,656
Int. Cl. G03b *27/76*
U.S. Cl. 355—80 **22 Claims**



Apparatus is disclosed for exposing a control material with radiation through an image-bearing transparency to vary the impedance of the control material in a pattern in proportion to the density of the image borne by the transparency. Applied across the control material and an electroluminescent material is an electric field which varies at the electroluminescent material as a function of the impedance pattern of the control material. And means are provided for exposing through the transparency a photosensitive medium with actinic radiation produced by the electroluminescent material whose intensity varies as a function of the electric field applied to it in a pattern proportional to the density distribution of the image borne by the transparency.

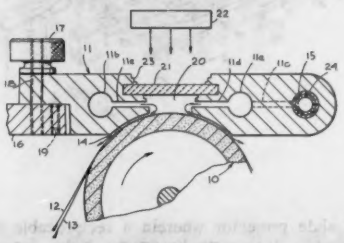
3,574,459
OPTICAL COPYING APPARATUS
Karl Hartwig, and Gunther Schnall, Munich, Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 22, 1968, Ser. No. 754,695
Claims priority, application Germany, Aug. 24, 1967, A56,589
Int. Cl. G03b *27/70*
U.S. Cl. 355—66 **9 Claims**

Optical copying apparatus wherein a transparent support for a positive or negative original is movable back and forth in or counter to the direction of travel of the copy. The light source is stationary so that it illuminates successive increments of the original on the moving support. The optical system comprises two axially spaced objective lenses and an image inverting optical device (such as an Abbe prism) which is located between the lenses and is turnable through 90° about the optical axis to assume a first position when the



support travels in one direction of a second position when the support travels in the opposite direction. The support is reciprocated by the drive for the copy, and such drive also changes the position of the optical device when the support changes the direction of its movement.

3,574,460
HIGH-PRESSURE GATE FOR PHOTOGRAPHIC CONTACT PRINTING
Alvin A. Snaper, 9722 Casaba Ave., Chatsworth, Calif., and Frank R. Gibson, 438 Lincoln Blvd., Santa Monica, Calif.
Filed Nov. 14, 1968, Ser. No. 775,639
Int. Cl. G03b *27/20, 27/10*
U.S. Cl. 355—91 **8 Claims**

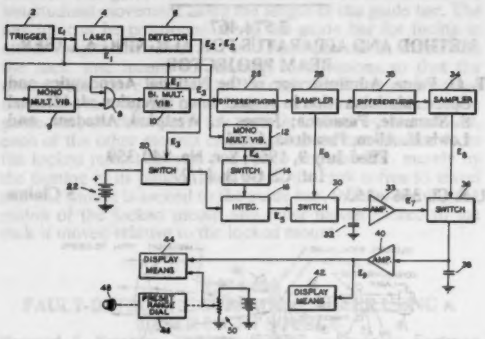


A new photographic printing apparatus with which contact prints are made by exposing the original film and the printing stock material at a time when they are brought into intimate contact with one another by pneumatic pressure. The sandwich arrangement of film and printing stock is passed over a drum above which is contiguously disposed a "shoe" mechanism that is contoured to be partially concentric with the drum, a small or narrow air gap separating the drum and shoe whereat they are concentric. The air, under pressure, is applied to the film from the shoe side and escapes through the air gap, the entire arrangement providing the pressure distribution needed to achieve fine contact printing.

3,574,461
RANGE DISPLAY SYSTEM
John F. Yurasek, Passaic, and Arthur Simon, Fair Lawn, N.J., assignors to The Bendix Corporation
Filed Sept. 30, 1968, Ser. No. 763,865
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **10 Claims**

A system for converting the interval between signals fired at a target and corresponding rebound signals therefrom to a

full scale target range indication and to an expanded scale indication showing target range to a preset range point, and



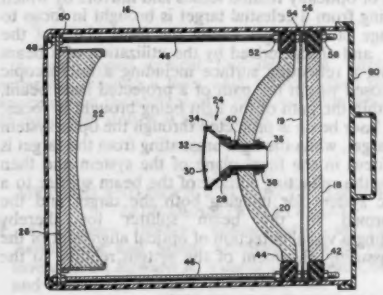
including noise reduction and range rate augmentation means for increased accuracy.

3,574,462

MAKSUTOV SPECTROGRAPH

Gale A. Harvey, Hampton, Va., assignor to the United States of America, as represented by the Administrator of the National Aeronautics and Space Administration.

Filed Sept. 26, 1968, Ser. No. 762,935
Int. Cl. G01j *3/40*
U.S. Cl. 356—76 **2 Claims**



A spectrograph especially suited for research analysis of low level sources in such areas as reentry spectroscopy, comprising a high efficiency transmission grating or prism combined with a simplified Maksutov optical layout, and featuring lightweight structural components and arrangements which minimize thermally induced misalignments and simple adjustment mechanisms for focus of the film surface and alignment of the optical elements.

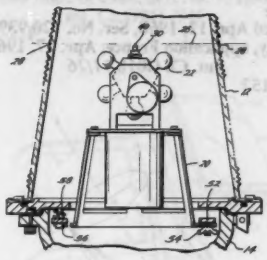
3,574,463

APPARATUS FOR ALIGNING LAMPS IN A LANTERN

Nicky R. Jackowski, and Peter W. Higgins, Houston, Tex., assignors to Tideland Signal Corporation, Houston, Tex.

Filed July 23, 1969, Ser. No. 843,956
Int. Cl. G01m *11/02*; **F21q** *3/02*
U.S. Cl. 356—123 **12 Claims**

A lamp focus fixture for inserting in a lamp holder in a lantern having a lens and lamp focusing indicators for aligning the lamp in the lens. A focus fixture including a flange which is shaped and sized in circumference and thickness the same as the flange of the lamp to be aligned whereby the fixture flange will fit into the lamp holder in the same position as the lamp and a sighting indicator secured to the flange and spaced from the bottom of the flange a distance equal to the distance between the midpoint of the filament to the bottom of the flange of the lamp. A base secured to the bottom of the flange having the same size and shape as the lamp to be aligned. The flange including



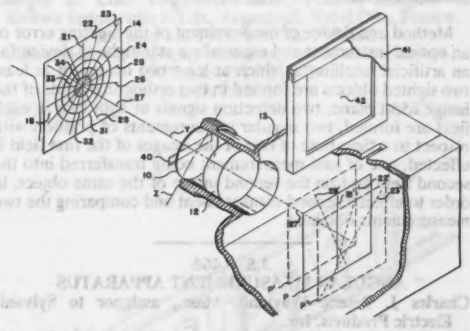
openings for receiving electrical pins. A focusing indicator having optics to compensate for the optics of the lantern lens and having telescopic lens for magnification and crosshair sighting for greater accuracy.

3,574,464

CAMERA TEST EQUIPMENT AND METHOD

Bradford Howland, 2161 Mass. Ave., Cambridge, Mass.

Continuation-in-part of application Ser. No. 454,602, May 10, 1965, now Patent No. 3,486,325. This application July 16, 1968, Ser. No. 745,162
Int. Cl. G01b *9/00*
U.S. Cl. 356—126 **9 Claims**



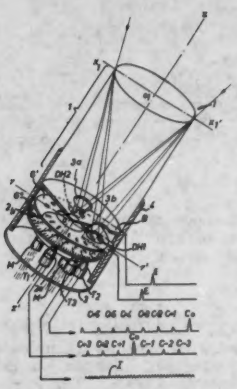
Two methods are described for testing cameras and camera lenses by utilizing the properties of the crossed-cylinder lens, an ophthalmic test device. In the first, the cylinder lens is used in conjunction with a rectangular grid to defocus the star image formed by a collimator. This test permits quantitative determination of axial chromatic aberration, spherical aberration and its variations with wavelength, and coma of the lens. In the second, a segment of the cylinder lens is used as a supplementary lens attachment to the camera, which photographs a polar-coordinate chart. Analysis of the photograph permits determination of the sagittal and tangential field curvatures and also indicates errors in focal adjustment and misalignment of film plane with respect to the lens axis.

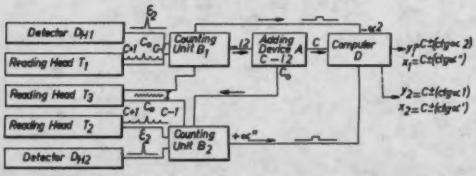
These tests require cylinder lenses of smaller dioptric power and quality superior to that available from the ophthalmic lens industry. Methods for the construction and synthesis of the needed large-aperture weak, cross-cylinder lenses and segments are given.

3,574,465
METHODS OF MEASUREMENT OF SIGHTING ERRORS OF AN OPTICAL INSTRUMENT AND THE CORRESPONDING MEASURING DEVICE

Pierre Poubeau, Gif-sur-Yvette, France, assignor to Nord-Aviation Societe Nationale De Constructions Aeronautiques, Paris, France

Filed Apr. 12, 1968, Ser. No. 720,939
Claims priority, application France, Apr. 17, 1967, 103,040
Int. Cl. G01b 11/26
U.S. Cl. 356—152 8 Claims



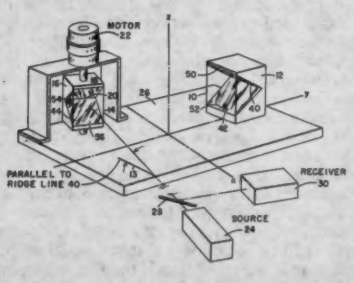


Method and device of measurement of the sighting error of an optical instrument and especially a star-sighting device for an artificial satellite, in which at least two images of at least two sighted objects are formed in two orthogonal fields of the image focal plane, two detection signals of light flux in each field are formed, two angular measurements of position with respect to a time base of one of the images of the first field is effected, one of said measurement being transferred into the second field and on the second image of the same object, in order to effect a second measurement and comparing the two measurements obtained.

3,574,466
ANGULAR MEASUREMENT APPARATUS

Charles J. Peters, Wayland, Mass., assignor to Sylvania Electric Products, Inc.

Continuation-in-part of application Ser. No. 419,384, Dec. 18, 1964, now abandoned. This application Apr. 15, 1968, Ser. No. 721,385
Int. Cl. G01b 11/26
U.S. Cl. 356—152 5 Claims

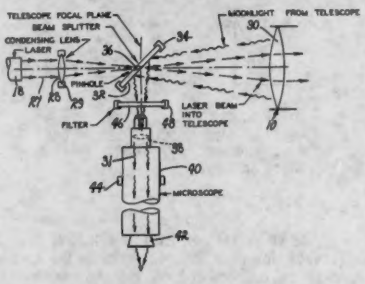


Apparatus comprising stationary and rotating electromagnetic energy reflectors oriented to define a common plane wherein the reflectors cooperate with a remote energy source and sensors to provide an angular measure in the common plane between a reference line and a line of sight.

3,574,467
METHOD AND APPARATUS FOR ALIGNING A LASER BEAM PROJECTOR

T. O. Paine, Administrator of the National Aeronautics and Space Administration in respect to an invention of; Michael S. Shumate, Pasadena; James A. Westphal, Altadena, and Lewis H. Allen, Pasadena, Calif.

Filed July 9, 1969, Ser. No. 840,359
Int. Cl. G01b 11/27
U.S. Cl. 356—153 5 Claims



A method and apparatus particularly suited for use in aligning an optic system, such as an astronomical telescope, employed as a laser beam projector for projecting a beam of laser light against a celestial target and including therein an arrangement of optically related lenses and mirrors by which light emanating from a celestial target is brought in focus to form an image of the target within the focal plane of the optic system, and characterized by the utilization of a beam splitter having a reflecting surface including a microscopic opening disposed within the path of a projected laser beam, as well as within the path of the light being brought in focus, whereby the laser beam is projected through the optic system toward the target, while the light emanating from the target is brought in focus in the focal plane of the system and then redirected by the reflecting surface of the beam splitter to a second optic system for imaging both the target and the opening formed in the beam splitter for thereby accommodating a visual detection of optical alignment of the system for assuring alignment of the system relative to the target.

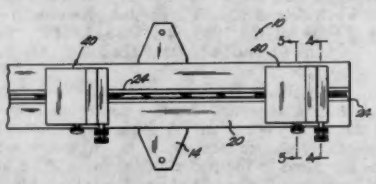
ERRATUM

For Class 356—215 see:
Patent No. 3,574,443

3,574,468
OPTICAL BENCH ASSEMBLY

Thomas S. Herman, Ypsilanti, Mich., assignor to Data Optics, Inc., Ypsilanti, Mich.

Continuation of application Ser. No. 709,481, Feb. 29, 1968, now abandoned. This application May 25, 1970, Ser. No. 41,692
Int. Cl. G02b 27/32, 7/02, 7/18
U.S. Cl. 356—256 22 Claims



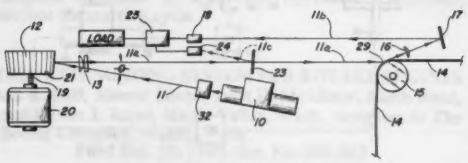
Apparatus for setting up and investigating optical systems which have an elongated base portion adapted to be leveled

and a flat plate on which optical mounts are positioned for movement in the longitudinal direction. The flat plate supports a guide bar or fail for guiding movement of the mounts. The guide bar carries a rack which is restricted to longitudinal movement along the length of the guide bar. The mounts can be positioned along the guide bar for facing in either longitudinal direction and have pinions in mesh with the rack, and means for turning such pinions so that the mounts can move relative to the rack. Each mount also has means for locking the rack against movement relative to the guide bar, so that when the rack is locked by one mount, each of the other mounts can be advanced or retracted from the locked mount or with respect to one another, merely by the turning of its pinion. Also, when the rack is free to travel and one mount is locked to the guide bar, then by turning the pinion of the locked mount any other mount locked to the rack is moved relative to the locked mount.

3,574,469
FAULT-DETECTING SURFACE SCANNER USING A LASER LIGHT SOURCE

Howard J. Emerson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 374,990, June 15, 1964. This application Jan. 23, 1968, Ser. No. 706,213
Int. Cl. G06n *21/16*
U.S. Cl. 356—200 **1 Claim**

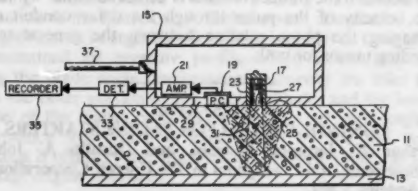


A high speed optical fault-detecting surface scanner apparatus utilizing a laser light source which detects faults appearing on the surface of a relatively wide web driven past an inspection station at high speeds.

3,574,470
METHOD AND DEVICE FOR DETECTING VOIDS IN LOW-DENSITY MATERIAL

T. O. Paine, Deputy Administrator of the National Aeronautics and Space Administration in respect to an invention of; Edward K. Vukelich, Flathead County, Mont., and William D. Howard, Huntsville, Ala.

Filed July 2, 1969, Ser. No. 838,630
Int. Cl. G01n *21/48*
U.S. Cl. 356—209 **5 Claims**

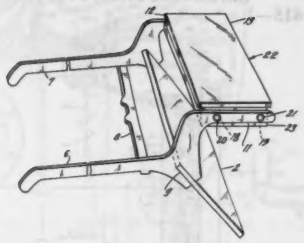


A method and device for detecting abnormal voids in a low-density material such as polyurethane foam insulation wherein light is beamed into the material and the light reflected from the material is received by a photodetector which converts the light into a voltage level proportional to the light intensity received by the detector. The intensity of the reflected light decreases when the light is beamed into low-density material having an abnormal void therein and the void is indicated by resultant reduction in voltage output of the photodetector.

3,574,471
PHOTOGRAPHIC MONITOR TO DETERMINE EXPOSURE TO LASER RADIATION

Elliott H. Kahn, Brooklyn, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.

Filed Mar. 8, 1968, Ser. No. 711,664
Int. Cl. G01j *1/46*
U.S. Cl. 356—215 **9 Claims**

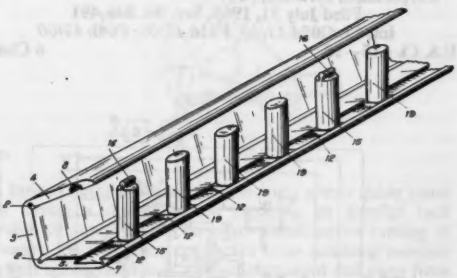


A device for determining the quantity of laser radiation exposed to the eyes or body of an observer in a given period of time. A beam splitter mounted on a spectacle frame directs a small portion of incident laser light to a photosensing device such as a plate of photosensitive film also carried on the frame. A light filter, which has a band pass which passes laser frequencies and blocks the remaining band of the spectrum is supported between the film and the beam splitter. The incident laser radiation is now monitored by the film. When the film is developed, one can determine the total quantity of laser light passing into the eyes or other body portions from the exposure of the film.

3,574,472
BINDER FOR PERFORATED LOOSE LEAVES

Georges E. Cott, Enghien-les-Bains, France, assignor to Reliure Industrielle S.T.D., Argenteuil, Val d Oise, France

Filed May 13, 1968, Ser. No. 728,668
Claims priority, application France, Oct. 5, 1967, May 16, 1967, 123,491;106,579
Int. Cl. B42f *3/00*
U.S. Cl. 402—22 **11 Claims**



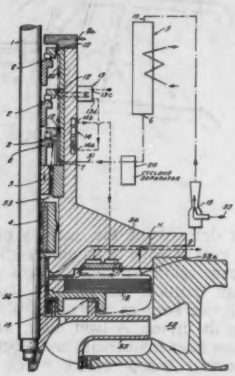
A binder for perforated looseleaf sheets comprises a profiled support member having a cross-sectional shape which defines a back and top and bottom flanges connected to the back. The support member has a longitudinal groove at the juncture between at least one flange and the back, whereby such flange is foldable with respect to the back. The foldable flange contains a longitudinal groove and the other flange contains a dovetail slot in which are slidably mounted studs on which the perforations of looseleaf sheets can be placed. The studs carry beads which interfit in the recess in the foldable flange so as to detachably secure the flanges together folding the support flat and can be closed by folding at a right angle.

3,574,473

METHOD AND APPARATUS FOR COOLING PARTS OF PUMPS IN NUCLEAR REACTORS OR THE LIKE

Karl Gaffal, Bobenheim(Rhine), Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal (Pfalz), Germany

Filed Jan. 24, 1969, Ser. No. 793,839
Claims priority, application Switzerland, Jan. 24, 1968, July 5, 1968, 1142-68; 10105-68
Int. Cl. F04d *29/00*; F01d *1/00*
U.S. Cl. 415—1 10 Claims



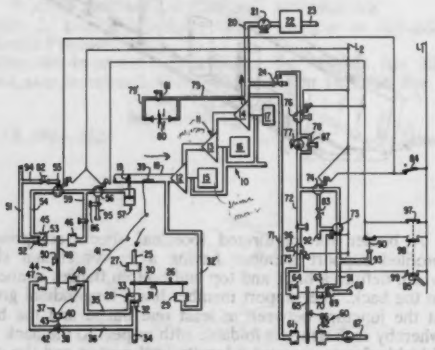
A nuclear reactor pump wherein the shaft seals and radial bearings are cooled by cold water which is circulated by thermosiphon action when the shaft is idle and the pump chamber contains hot fluid. Streams of cold water for cooling of the bearing and of the seals are caused to flow through a common main cooler and thereupon enter the pump housing by way of a common inlet to flow toward separate outlets. The channel for the stream which cools the seals contains several flow restrictors.

3,574,474

METHOD OF AND APPARATUS FOR CONTROLLING THE OPERATION OF GAS COMPRESSION APPARATUS

Nick Lukacs, Adamsburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 31, 1969, Ser. No. 846,491
Int. Cl. G05d *13/30*; F01d *17/00*; F04b *49/00*
U.S. Cl. 415—15 6 Claims



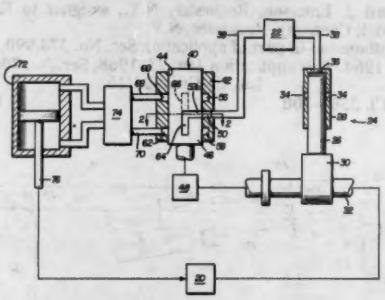
A control system for regulating operation of a gas compression plant, selectively operable on either base mode or on intermittent mode. The control system includes a switch operable to transfer the compression plant from base mode to intermittent mode or from intermittent mode to base mode. Valves, operable in response to the switch, have a first operating position for base mode and a second operating position for intermittent mode. The discharge pressure of the gas from the compression plant is sensed and a signal related thereto is compared to a predetermined signal, to produce a resultant control signal, operable to regulate a dump valve which governs the venting of excess discharge gas to the atmosphere. The dump valve is modulated during base mode operation and is selectively fully open or fully closed during intermittent mode.

3,574,475

SPEED AND TEMPERATURE SENSING DEVICES

George D. Wolff, 22565 Statler Blvd., St. Clair Shores, Mich.

Continuation-in-part of application Ser. No. 536,400, Mar. 22, 1966, now Patent No. 3,395,718. This application Aug. 6, 1968, Ser. No. 750,508
Int. Cl. G01p *3/72*; F02f *31/00*
U.S. Cl. 415—17 16 Claims



Speed and temperature-sensing devices for generating a pressure signal in response to vibrations in one or more operating conditions of a variable speed device, such as the speed of the device or the temperature of a selected region variable with or controlled by the speed of the device. Pressure pulses of gaseous fluid are periodically transmitted through a delay conduit to a cyclically operable pulse-dividing means which divides the arriving pulses between a pair of outlet conduits in proportions determined by the relationship between the phase of the divider within its operating cycle and the time of arrival of the pulse. Pulses are transmitted from a pulse-generating means to the dividing means through a conduit of a length such that a finite period of time is required for the pulse to reach the pulse-dividing means. The dividing means and the generating means operate at a cyclic relationship to each other and the length of the delay conduit is fixed. Variation in the proportion of the pulses between the outlet conduits is achieved either by varying the velocity of the pulse through the delay conduit or by changing the phase relation between the generating and dividing means, or both.

3,574,476

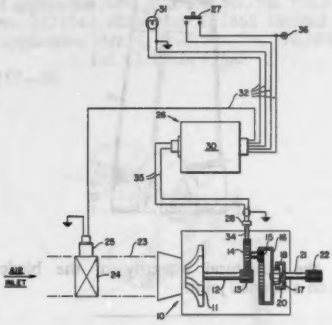
CONTROL SYSTEM FOR ENGINE STARTERS

Arthur H. Jacomet, Phoenix, and Quentin A. Johnson, Scottsdale, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 29, 1968, Ser. No. 756,115
Int. Cl. F01c *21/12*
U.S. Cl. 415—36 12 Claims

The subject system is designed to control the operation of a gas turbine engine starter. It includes a solenoid valve for governing the flow of operating fluid to the starter motor, an electromagnetic pickup for sensing starter motor speed, a start switch, an overspeed indicator means, and electronic circuit means operative to connect the solenoid with a source of electric current when the start switch is actuated and to disconnect it from the source when the magnetic pickup senses a predetermined speed of the starter motor. The system is

operative also to disconnect the solenoid from the current source if a short circuit occurs, or if for any reason the electromagnetic pickup fails to sense motor operation. This disconnecting operation will be repeated each time the start



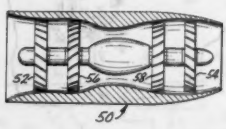
switch is closed until the fault is eliminated. If the solenoid valve fails to close for any reason and the starter motor continues to accelerate, the system operates to energize an overspeed indicator to warn the operator to manually interrupt the starting cycle.

3,574,477

NOISE ATTENUATING SYSTEM FOR ROTARY ENGINES

Hans R. Dolf, Mercer Island; John D. McAlister, North Bend, and Edwin J. Zapel, Maple Valley, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 19, 1969, Ser. No. 800,562
Int. Cl. F01d *5/10, 25/00*
U.S. Cl. 415—60 **9 Claims**



A plurality of angularly arranged baffles or blades which are radially mounted to form a fan type construction. The fan is mounted for free rotation in the fluid stream of a rotary engine in the path of the propagating sound waves emitted from the engine. During operation the rotating fan will present a barrier to the sound waves and cause them to be either reflected or scattered towards an area having sound absorbing characteristics while offering a minimum obstruction to the fluid flow. A further sound attenuation and an improvement in engine performance is achieved through a predetermined air pressure profile which is obtained by fairing the blade angle configuration, whereby the inlet air drives the outer portion of the rotating blades and the inner portion of the blades compresses the inlet air. Any engine performance loss which is experienced by the fan type apparatus is offset by the improved air pressure profile at the first stage engine inlet area.

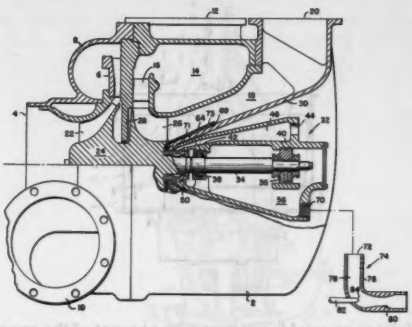
3,574,478

SEALING SYSTEM FOR TURBINE AND COMPRESSOR BEARINGS

Michael Toth, Jr., Fallsington, Pa., and Richard M. Salzmann, Trenton, N.J., assignors to De Laval Turbine Inc., Trenton, N.J.

Filed Oct. 21, 1968, Ser. No. 769,045
Int. Cl. F04d *29/00, 29/08*
U.S. Cl. 415—112 **5 Claims**

In turbines and compressors, leakage of oil from a bearing chamber into gas passages and leakage of gas into the bearing chamber is prevented by evacuating the bearing chamber to draw a stream of air in one direction past a labyrinthine packing toward the bearing chamber, while



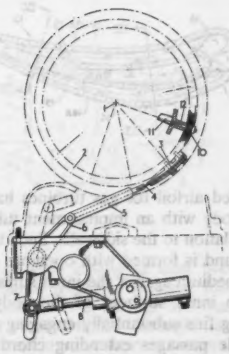
drawing a stream of air from the same source past a second labyrinthine packing toward the gas passage by taking advantage of the vacuum-producing effect of the flow of gas.

3,574,479

TURBINE HAVING VARIABLE-ANGLE NOZZLE GUIDE VANES

Mark Cary Sedgwick Barnard, Solihull, England, assignor to Leyland Gas Turbines Limited, Solihull, England

Filed Aug. 20, 1969, Ser. No. 851,703
Claims priority, application Great Britain, Sept. 17, 1968, 44120/68
Int. Cl. F01d *17/00*
U.S. Cl. 415—160 **4 Claims**



A turbine being a ring of variable-angle nozzle guide vanes each having a driving pinion engaging an annular rack movable circumferentially to effect simultaneous turning of the vanes, the rack being connected to an actuating member by a leaf spring flexible in a direction toward and away from the circumference of the annular rack, thereby to avoid a pivotal joint between the actuating member and the rack in a very hot region of the turbine.

3,574,480

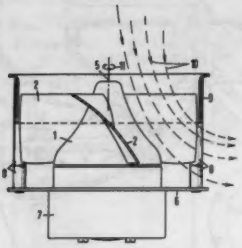
SEMIAXIAL FAN ROTOR

Leo Hoepfner, Neustadt, Aisch, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Nov. 25, 1968, Ser. No. 778,445
Claims priority, application Germany, Oct. 8, 1968, G6801232.8
Int. Cl. F04d *25/16, 25/06*
U.S. Cl. 415—209 **4 Claims**

The vanes of a tan rotor have an outer contour shaped as a circular arc concentric to the hub axis of the rotor, whereas

the inner contour of the vanes, where the vanes are joined with the hub, have a curvature reversed with respect to that of the outer contour. The outer region of the fan rotor acts



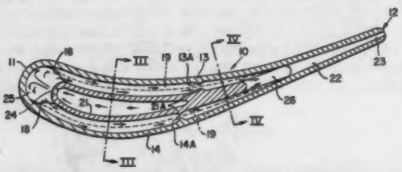
essentially as an axial fan, whereas on account of the reversal and curvature the inner region of the vanes produces a radial fan action.

3,574,481

VARIABLE AREA COOLED AIRFOIL CONSTRUCTION FOR GAS TURBINES

James A. Pyne, Jr., Phoenix, and Leslie L. Miller, Scottsdale, Ariz.

Filed May 9, 1968, Ser. No. 727,899
Int. Cl. F01d 5/18
U.S. Cl. 416—90 3 Claims



A cooled airfoil for gas turbines having a hollow airfoil-shaped body with an impingement tube disposed therein in spaced relation to the sidewalls. Such tube receives a cooling medium and is formed with openings disposed to direct the cooling medium against the inner surface of the leading edge wall. The inner surfaces of the body sidewalls have heat dissipating fins substantially engaging the impingement tube to provide passages extending chordwise of the airfoil to conduct the cooling medium to the rear where it is vented through openings in the airfoil trailing edge. The passage forming fins may be variably spaced and of variable height to vary the cooling medium flow area at predetermined variable height to vary the cooling medium flow area at predetermined regions of the airfoil sidewalls, and other fins of predetermined variable height may be provided in the passages to effect differential cooling effects as required by the temperatures to which different portions of the airfoil are exposed.

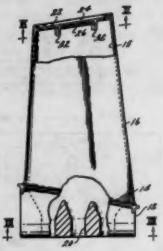
3,574,482

TURBOMACHINERY BLADES

Joseph W. Savage, and Henry J. Brands, Cincinnati, Ohio, assignors to General Electric Company

Filed Jan. 23, 1969, Ser. No. 793,434
Int. Cl. F01d 5/18
U.S. Cl. 416—90 5 Claims

A cast, hollow, turbine blade has an opening in its tip end wall formed by a core pin which positioned the core in a mold as the blade was cast. A plate is brazed to the inner surface of this end wall and seals this opening in a manner



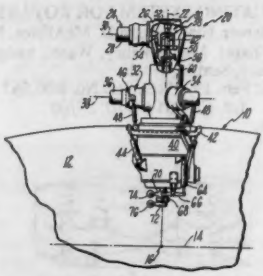
such that the structural integrity of the blade is not dependent on a bonded joint.

3,574,483

PITCH CONTROL MECHANISM FOR BLADED ROTOR

Arthur W. Linden, Shelton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 18, 1969, Ser. No. 859,093
Int. Cl. B64c 27/74
U.S. Cl. 416—130 11 Claims



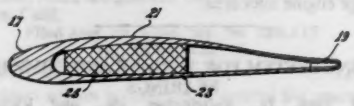
Two Z-crank mechanisms connect at different stations to a rotor swashplate so that translation of the mechanisms causes collective pitch variation of the blades and so that rotation of the mechanisms either together or separately causes cyclic pitch variations of the blades and wherein the portions of the Z-crank mechanisms which connect directly to the rotor swashplate are positioned on opposite sides thereof to permit a minimum diameter installation.

3,574,484

ROTOR BLADE HEAVY CORE TUNING WEIGHT

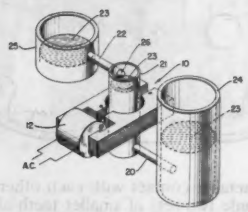
Harold R. Lamb, Jr., Media, Pa.

Filed May 14, 1969, Ser. No. 824,535
Int. Cl. B64c 27/46
U.S. Cl. 416—144 1 Claim



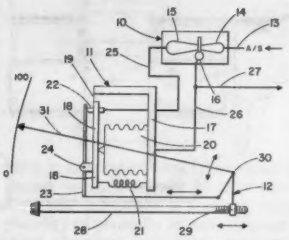
A helicopter rotor blade includes a honeycomb core within the airfoil contour forming a composite-type rotor blade having the required mass for dynamically tuning the structure. The location and mass of the tuning weight is variable and the composite rotor blade is attachable to the hub in the conventional manner.

3,574,485
METHOD AND APPARATUS FOR MOVEMENT OF LIQUIDS BY ELECTROMAGNETIC MEANS
Harry H. Herman, Jr, Washington, D.C., assignor to Louis Broido and Joseph A. Broido, New York, N.Y., fractional part interest to each
Original application Nov. 28, 1958, Ser. No. 776,884, now Patent No. 3371541, dated Mar. 5, 1968. Divided and this application Mar. 4, 1968, Ser. No. 710,108
Int. Cl. H02k *45/00*
U.S. Cl. 417—50 4 Claims



Apparatus for effecting selectively directed motion of contained conducting fluids by selective application of electromagnetic force fields thereto.

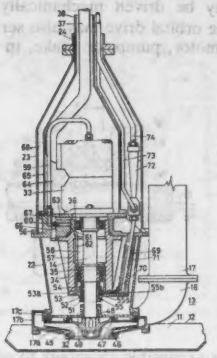
3,574,486
HIGH PRECISION MINIATURE HALF-CONE ASPIRATOR SYSTEM
Hoel L. Bowditch; Robert C. Prescott, Foxboro, and Herbert A. Neuman, Wrentham, Mass., assignors to The Foxboro Company, Foxboro, Mass.
Filed Nov. 1, 1968, Ser. No. 772,598
Int. Cl. F04f *5/16*
U.S. Cl. 417—185 1 Claim



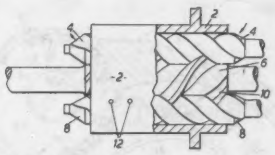
In pneumatic instrumentation a miniature aspirator system in which the aspirator form is channelled in one plate of a sandwich unit, to form half-cone passages apex-to-apex. This lends itself to simple manufacturing techniques and pneumatic circuit plate assembly. An example of application is in a nozzle-baffle system, such as a control unit set point transmitter.

3,574,487
PUMP MEANS
Frank Mohn, Krakenes, Fana, Norway, assignor to Patents and Developments A/S, Helldal, Norway
Filed Oct. 14, 1968, Ser. No. 776,826
Claims priority, application Norway, Oct. 18, 1967, 170,172
Int. Cl. F04d *13/02*
U.S. Cl. 417—409 12 Claims

A pump means for submersion in and transfer of fluid ship's cargo, having a zone between the driving system of the pump and said fluid cargo to receive any leakage of driving medium and fluid cargo and means for controlling the pressure and regulating the thermal conditions in said zone and for remote controlling the removal of leakage from said zone. A pump unit comprising said pump means received in a protective rigid casing.



3,574,488
SCREW PUMPS
Stamford Robert Francis Vanderstegen-Drake, Berkshire, England, assignor to Plenty & Son Limited, Newbury, Berkshire, England
Filed Apr. 17, 1969, Ser. No. 817,109
Claims priority, application Great Britain, Apr. 19, 1968, 18,720/68
Int. Cl. F04c *1/10*
U.S. Cl. 418—15 4 Claims

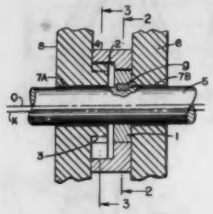


A screw pump of the type having at least two meshing screws with helical flights rotatable in, and having edge sealing with, bores formed in a casing, the casing being formed with one or more holes through its wall to communicate with the moving chambers between the screws located towards the discharge end of the pump, the position and size of the holes being such as to allow gradual collapse of cavities in the chambers.

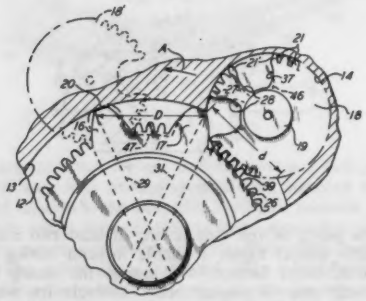
3,574,489
ORBITAL DRIVE AND FLUID MOTOR INCORPORATING SAME
Michel A. Pierrat, Andover, Mass., assignor to Compudrive Corp., Boston, Mass.
Filed Apr. 4, 1969, Ser. No. 813,652
Int. Cl. F01c *1/10, 11/00;* F16h *1/28*
U.S. Cl. 418—61 17 Claims

An orbital drive for delivering high torque at low speed ratios comprises two pairs of meshed gears, each pair including an inner externally-toothed gear and an outer internally-toothed orbiting gear arranged to orbit in an eccentric path around its mate. One of the inner gears is stationary and the other is mounted on an output shaft. The orbiting gears are connected to orbit together around the output shaft axis, and may be formed in a common blank. A rotatable ring, concentric with the output axis, has eccentric driving relation with the orbiting gears. This driving relation

may be established by peripheral engagement of these gears in an opening in the ring eccentric to the output axis. The ring member may serve as an input drive to produce orbital motion of the orbiting gears and thereby drive the output shaft, and may be driven mechanically, hydraulically, or electrically. The orbital drive may also serve as an hydraulic or pneumatic motor, pump, or brake, in which the mating gear teeth form expansible chambers to which working fluid is commutatively directed by ports formed in the ring member. Two or more of these orbital drives may be coupled to a common output shaft and a common input drive to provide added torque transmission capability; their respective orbiting gears are preferably phased apart equiangularly to relieve the output shaft of bending loads.



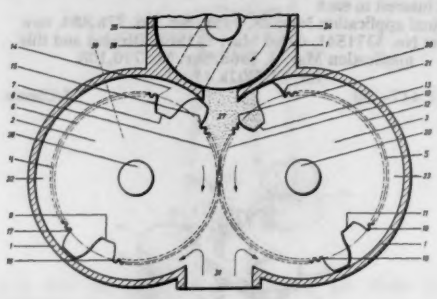
3,574,490
FLUID PUMP OR MOTOR HAVING ROLLERS
Philip Hartmann, Racine, and Jack E. Lake, Sturtevant, Wis., assignors to Koehring Company, Milwaukee, Wis.
Filed May 21, 1969, Ser. No. 826,505
Int. Cl. F01c *1/00, 21/00, 1/08*
U.S. Cl. 418—161 **8 Claims**



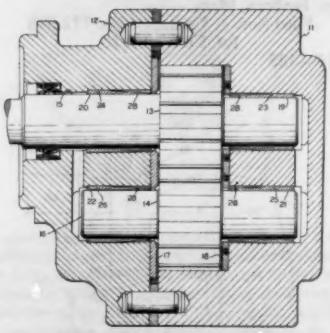
An inner member and an outer member are relatively rotatable, and the members are arranged with fluid passageways, and the members define an annular chamber or working space. One of the members has rollers rotatably mounted to extend into the annular space, and the other of the members has vanes fixed thereto and extending into the annular space. The rollers have pockets for receiving the vanes when the rollers roll over the vanes. The roller pocket surfaces and the vanes are formed to provide rotation timing as the rollers pass over the vanes so that relative rotation of the two members is maintained the same as it is when the vanes are not in the roller pockets.

3,574,491
GEAR-TYPE ROTARY MACHINE
Erich Martin, Kirchenleite 4, 8021 Icking, Germany
Filed Apr. 22, 1969, Ser. No. 818,355
Int. Cl. F01c *1/18*
U.S. Cl. 418—205 **5 Claims**

A gear-type rotary machine for transport of liquids or for compression or expansion of gases comprises a housing accommodating two mating gear-shaped rotors whose shafts are preferably driven by externally mounted torque transmitting gears in such a way that the teeth of rotors are out of actual metallic contact with each other. The teeth of each rotor include two sets of smaller teeth alternating with one or more larger teeth, but all teeth of each rotor have a common pitch circle.



3,574,492
BUSHING ARRANGEMENT FOR ROTARY SHAFTS
Robert E. Schwary, Kalamazoo County, Mich., assignor to General Signal Corporation
Filed Sept. 26, 1969, Ser. No. 861,350
Int. Cl. F01c *1/18*
U.S. Cl. 418—206 **14 Claims**

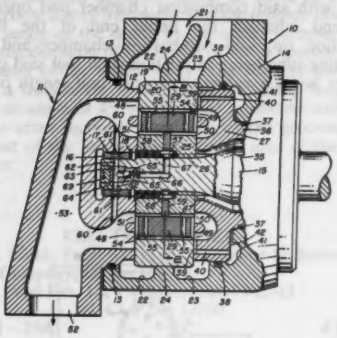


A scheme for reducing corner loading on a plain bearing or bushing employed to support a rotary shaft, such as the gear-carrying shaft of a gear pump or motor, which is subjected to unbalanced radial loads. The scheme consists of a tapered clearance space formed between the outer periphery of the bushing and the wall of the bore in the supporting structure in which the bushing is secured. This space is at least coextensive with the load zone of the bushing in the circumferential direction and extends longitudinally from the overloaded end of the bushing a distance greater than one-half the length of the bushing, but not so far as to preclude a secure fit between the bushing and the bore. Preferably the clearance space surrounds the bushing, and extends over about three-fourths the length of the bushing.

3,574,493
VANE TYPE PUMPS
William M. Hamilton, Hilliard, Ohio, assignor to Abex Corporation, New York, N.Y.
Filed Apr. 21, 1969, Ser. No. 817,827
Int. Cl. F04c *1/00*
U.S. Cl. 418—268 **10 Claims**

A rotary vane fluid power unit in which a plurality of vanes slidably supported in a rotor are individually maintained in

engagement with an encircling cam surface by fluid pressure acting radially on the inner surfaces of pistons which engage

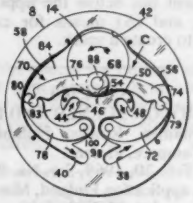


the vanes. A fluid passageway is provided internally of the pump which includes a valve for maintaining under pressure the fluid that reacts against the pistons.

3,574,494
FLUID MACHINE ESPECIALLY ADAPTED FOR HIGH PRESSURE APPLICATIONS

Friedrich O. Bellmer, Stanhope, N.J., assignor to Worthington Corporation, Harrison, N.J.

Filed Feb. 7, 1969, Ser. No. 797,415
Int. Cl. F01c *21/00*
U.S. Cl. 418—270 **19 Claims**



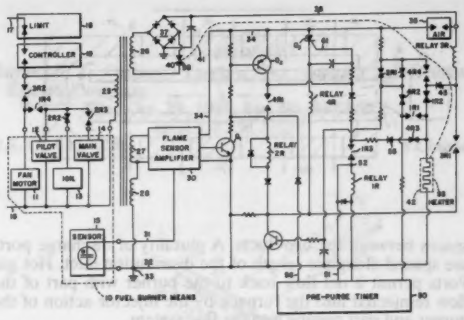
A fluid machine is provided which is operable as a positive displacement pump, or fluid motor, or as a combined fluid motor and pump, and comprises a working member taking the form of a plurality of pivotally interconnected links which divides a working chamber into inner and outer working chambers and is movable through a cycle of operation therewithin to alternately expand and contract respective portions of said inner and outer working chambers. Inlet and outlet passages are provided in fluid flow communication with each of said inner and outer working chambers and are operable to enable the pumping of fluid therethrough when the fluid machine is utilized as a pump, and/or to admit fluid under pressure thereto and exhaust the same therefrom when the fluid machine is utilized as a fluid motor or a combined fluid motor and pump.

3,574,495
BURNER CONTROL SYSTEM

William R. Landis, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 11, 1969, Ser. No. 884,154
Int. Cl. F23n
U.S. Cl. 431—26 **8 Claims**

A fuel burner control system which includes a flame detecting unit and an electrically heated safety switch for safely starting and operating a fuel burner. The burner control system utilizes a time delay circuit for purging a combustion chamber prior to a trial for ignition. The system includes a conventional fan relay, ignition relay, and flame relay, but also includes a fourth relay and series connected silicon-controlled rectifier connected to lock the system out

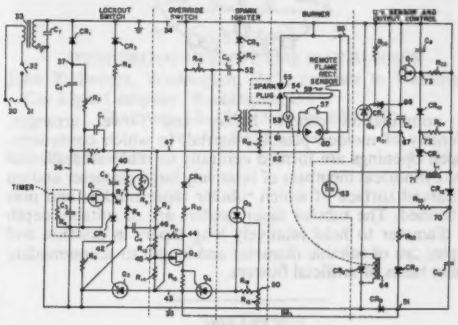


or cause the safety switch to heat in the event of a loss of flame signal after the system has properly been started, or in the case of a false flame signal occurring during the purge timing period.

3,574,496
DIRECT SPARK IGNITER COMBUSTION SAFEGUARD APPARATUS

William Lloyd Hewitt, Harbor City, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 11, 1969, Ser. No. 840,994
Int. Cl. F23n *5/08*
U.S. Cl. 431—71 **8 Claims**



A direct spark igniter combustion safeguard system having two flame sensors, a first of these being an ultraviolet responsive sensor positioned to observe the ignition spark and the resulting flame and connected in controlling relation to the gas valve, and the second sensor being of the flame rectification type for controlling igniter turnoff and also controlling a safety timer and lockout switch.

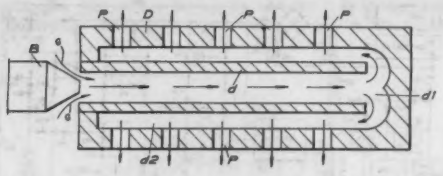
3,574,497
HEAT DISTRIBUTION SYSTEM FOR HEAT TREATMENT FURNACES

Cyril Henry Rann, Birkenshaw, Bradford, and Elizabeth Margaret Hall, Blackhill, Consett, England, assignors to North Eastern Gas Board, Leeds, England

Filed Jan. 28, 1969, Ser. No. 794,670
Int. Cl. F23l *7/00*
U.S. Cl. 431—116 **3 Claims**

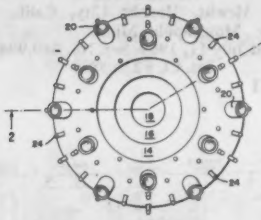
Apparatus for high convective heat transfer effect at comparatively low terminal head above the temperature in a

heat treating furnace embodying a high velocity tunnel burner. Within the furnace distribution duct into which gases are projected from the burner, there is provided an inner mixing duct open at both ends and one or more distribution



spaces between the two ducts. A plurality of discharge ports are spaced along the length of the distribution duct. Hot gas Ports permit a net flow back to the burner with part of the flow reinjected into the furnace by the injector action of the burner and part passing into the flue system.

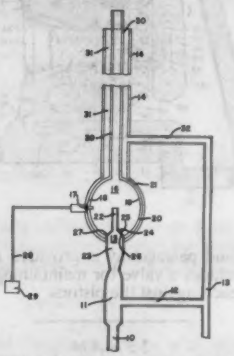
3,574,498
MULTI-PURPOSE CANDLE HOLDER AND FLOWER ARRANGER
Melvin Zarinsky, 18 Countryside Lane, Marblehead, Mass.
Filed July 10, 1969, Ser. No. 840,718
Int. Cl. F21v *35/00*
U.S. Cl. 431—126 **4 Claims**



A combination candle holder and flower arranger, preferably of molded plastic material, in which concentric, stepped openings are formed centrally to receive candles or other cylindrical members of relatively large diameter and on the curved surface of which tubular taper holders and pins are formed. The tubular taper holders are of suitable depth and diameter to hold relatively long tapers in position and the pins are of suitable diameter and length to accommodate tubular bases of artificial flowers.

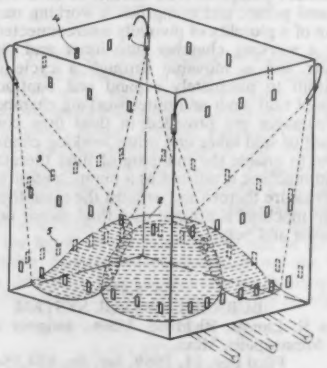
3,574,499
IGNITING DEVICE
Alexander J. Turpin, Lebanon, Pa., and Irwin C. Grotzinger, Houston, Tex., assignors to Said Grotzinger assignor to Smoke-Ban Manufacturing Incorporated, Pasadena, Calif.
Filed Oct. 13, 1969, Ser. No. 865,765
Int. Cl. F23r *1/02*
U.S. Cl. 431—158 **8 Claims**

An apparatus comprising (1) a mixing zone in open communication with a source of an oxygen-containing gas and a source of a combustible gas, (2) a combustion chamber having a substantially symmetrical internal configuration and having at least one electrically generated spark-producing means in the sidewall thereof, (3) a tubular injection jet extending from said mixing chamber into said combustion chamber to a point just above said spark-producing means, said injection jet being in open communication at one end thereof with said mixing zone at at the other end thereof with said combustion chamber, the upper end of said injection jet having a diameter less than that of said lower end, at least one minor opening through the sidewall of said injection jet into said combustion chamber, said opening being adjacent the lower end of said jet and having a diameter substantially less than the diameter of said tubular injection jet, and the plane of said opening being in angular relation to the axis of said injection jet, (4) a first conducting tube in open communication at one end thereof with said combustion chamber and opening at its other end adjacent the upper end of the flare stack combustion tip, said combustion chamber and said first conducting tube being in relation such that said combustion chamber bears a volume ratio per unit length of said first



conducting tube within the range of 1.7:1 to 2.25:1, (5) a second conducting tube coaxially aligned with and of greater diameter than said first conduction tube, said second conduction tube being in open communication adjacent its lower end with the source of a combustible gas and being open at its upper end to the atmosphere, said upper end terminating adjacent but below the upper end of said first conducting tube, and (6) means for causing said spark-producing means to create a spark.

3,574,500
WASTE-LIQUOR BURNER AND DISPERSER
Reino T. Huouvilainen, Kaleva, Finland, assignor to Oy Tampelia Ab, Tampere, Finland
Filed Feb. 20, 1969, Ser. No. 801,049
Claims priority, application Finland, Mar. 1, 1968, 558/68
Int. Cl. F23c *5/00*
U.S. Cl. 431—175 **3 Claims**

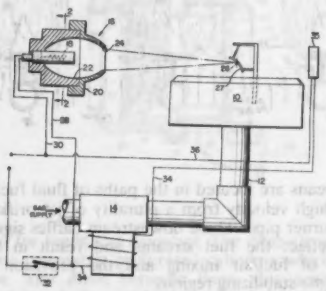


The invention relates to a device for burning waste liquor and to the disperser in the form of a nozzle used therein. The liquor is dispersed downwards from the corners of a furnace in showers of droplets in the form of full cones. The distance of the dispersers nozzle outlets from the bottom of the furnace is 45—60 percent of the sum of a narrower and a

broader side of the furnace's bottom plane and the geometrical axis of each of the dispersers is in a plane which forms an angle of 40°—50° with the sidewalls of the furnace, and the axis of each disperser forms an angle of 35°—55° with the vertical line of intersection of the furnace sidewalls.

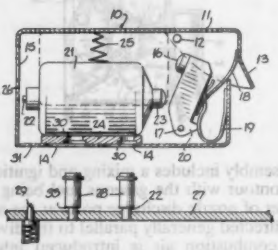
The top angle of the outlet in the outlet member is 60°—90° and the diameter of the outlet is 30—45 percent of the inner diameter of the nozzle body. The body of the nozzle comprises a detachable vortex element having four spiral grooves at an angle of 45°—60° to the transverse axis of the nozzle. The cross-sectional flow area of the grooves is 45—55 percent of the inner cross-sectional area of the nozzle body portion.

3,574,501
ELECTRIC IGNITER
Richard K. Mitts, Fullerton, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Feb. 12, 1969, Ser. No. 798,743
Int. Cl. F23q *13/00*
U.S. Cl. 431—254 **4 Claims**



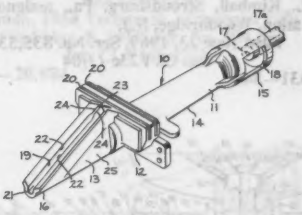
An electric ignition system for burners utilizing an igniter having a source of high intensity light and a reflector for focusing the light at a point within igniting proximity of the burner to provide a point of high temperature for ignition of fuel emanating therefrom.

3,574,502
MECHANISM FOR SHIELDING A CARTRIDGE CONTAINING A PYROPHORIC SUBSTANCE
Douglas S. Fuller, Ockham; Bruce Lester Reid, London; Arthur T. Theobald, Great Bookham, England, and Leandre A. Guenin, Geneva, Switzerland, assignors to Ronson Corporation, Woodbridge, N.J.
Filed July 10, 1968, Ser. No. 743,870
Claims priority, application Great Britain, July 11, 1967, 31921/67
Int. Cl. F23q *2/00*
U.S. Cl. 431—267 **14 Claims**



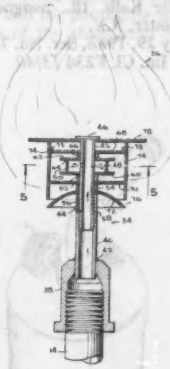
A mechanism for shielding a cartridge containing a pyrophoric substance in which the cartridge is encapsulated and is placed on an ignition device such as a cigarette lighter. The encapsulated cartridge cannot discharge its flammable contents until it is placed within the confines of the ignition mechanism, thereby rendering the cartridge safe to handle when it si removed from the ignition mechanism.

3,574,503
GAS BURNER
Raymond J. Osmers, Yardley, Pa., assignor to General Electric Company
Filed Oct. 20, 1969, Ser. No. 867,850
Int. Cl. F23d *13/26*
U.S. Cl. 431—286 **5 Claims**



A gas burner has a venturi portion, a crossover portion downstream of the venturi portion and a head portion downstream of the crossover portion. The head portion includes an elongated inclined port from which a gas and air mixture issues for combustion adjacent thereto. The port has a lower region of enlarged width and an upper region of reduced width, each region being defined by a pair of spaced parallel edges. The region of reduced width has its upper termination adjacent the crossover portion whereby ignition of the gas and air mixture issuing from the port may be effected from a flame present at the crossover portion. The region of reduced width minimizes burn back.

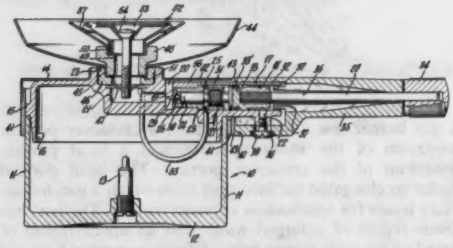
3,574,504
WINDPROOF OPEN FLAME GAS BURNER
John T. Breslin, Washington, D.C., assignor to Washington Gas Light Company, Washington, D.C.
Filed Aug. 18, 1969, Ser. No. 850,707
Int. Cl. F23d *13/14*
U.S. Cl. 431—329 **10 Claims**



A windproof open flame gas-burner apparatus comprising a plurality of gas-permeable vertical baffle means symmetrically placed in front of apertures in the gas supply tube, a nongas-permeable horizontal baffle means superposed over one of the gas-permeable vertical baffle means and additional horizontal gas-permeable barrier means

symmetrical to the gas supply tube positioned on both sides of one of the vertical baffle means and within another of the vertical baffle means, an additional gas-permeable horizontal barrier means positioned transversely and above the outer of the plurality of said gas-permeable vertical baffle means through which the flame normally passes in order that wind approaching the gas burner must pass through a variety of wind velocity reducing baffle means and barrier means before being able to extinguish the flame supported at the leeward side of the gas burner.

3,574,505
HEATING UNIT FOR COOKING
Everett L. Kimball, Stroudsburg, Pa., assignor to Ronson Corporation, Woodbridge, N.J.
Filed June 23, 1969, Ser. No. 835,531
Int. Cl. F23c *13/04*
U.S. Cl. 431—344 **6 Claims**

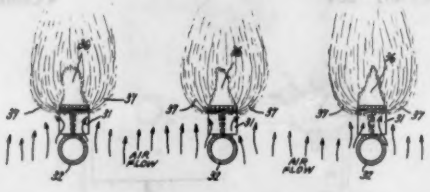


A fuel burning unit for cooking food in which a variable air supply is combined with a variable fuel supply mechanism to provide a uniform stable flame in which gas consumption is held to an efficient minimum. The air supply is varied by changing the size of an air admitting opening which is on the exterior portion of the fuel burning unit. The air opening is varied in size by reciprocal movement of a handle located on the fuel burning unit whereby desired amounts of air can be admitted into the unit to be mixed with a desired amount of fuel which can be ignited to produce a stable flame.

3,574,506
BLOW TORCH BURNER
Joseph K. Locke, De Kalb, Ill., assignor to Bernzomatic Corporation, Rochester, N.Y.
Filed July 29, 1968, Ser. No. 748,436
Int. Cl. F23d *13/40*
U.S. Cl. 431—349 **9 Claims**

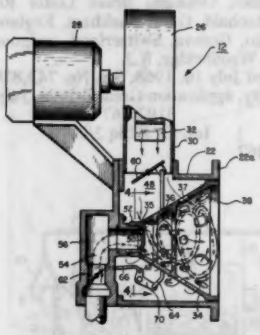
A blowtorch burner having a section formed as a jet pump which leads into a cylindrical sleeve provided with a flame holder. A gas conduit with a gas flow orifice leads into the inlet section of the jet pump, which is provided with peripheral air inlet ports, the orifice constituting the nozzle of the pump. The flame holder in connection with the construction producing a pencil-type flame has a central axial passage and a peripheral gas flow passage with a greater cross-sectional area at its exit than at its inlet in order to provide a mantle of slow moving gas. In connection with a utility-type flame, the flame holder has a central diverter with peripheral gas flow passages extending therearound.

3,574,507
AIR/FUEL MIXING AND FLAME-STABILIZING DEVICE FOR FLUID FUEL BURNERS
Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company
Filed July 31, 1969, Ser. No. 846,548
Int. Cl. F23d *13/24*
U.S. Cl. 431—350 **5 Claims**



Baffle means are located in the paths of fluid fuel streams issuing at high velocity from a plurality of jet orifices in an elongate burner pipe. These downstream baffles significantly laterally deflect the fuel streams and result in both the promotion of fuel/air mixing and the provision of low-velocity flame-stabilizing regions.

3,574,508
INTERNALLY FIRED INDUSTRIAL GAS BURNER
Charles W. Rothhaar, Muncie, and Guy Richard Harter, New Castle, Ind., assignors to Maxon Premix Burner Company, Inc., Muncie, Ind.
Filed Apr. 15, 1968, Ser. No. 721,461
Int. Cl. F23d *15/00*
U.S. Cl. 431—351 **19 Claims**



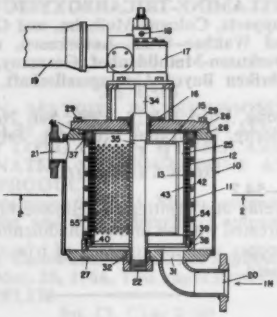
A burner assembly includes a mixing and ignition chamber of a conical contour with the gaseous fuel being introduced through a series of nozzle discharge ports at the small end of the cone and directed generally parallel to the diverging cone surface. The combustion air is introduced into the cone through a plurality of cone apertures arranged in a series of axially spaced stages. Preferably, the cone apertures are canted to develop a swirling of the air about the cone center axis thereby enhancing fuel-air intermixture, ignition control and flame retention. A series of inwardly projecting

circumferential bosses are preferably formed on the interior cone surface between respective aperture stages to divide the burner into a series of firing zones and also further enhance the aforesaid characteristics. Other features are disclosed.

3,574,509
BACKWASH FILTER

Ramon J. Zentis, McKean, Pa.; John R. Goode, Westport, Conn.; Donald F. Durso, Memphis, Tenn., and John H. Schmid, Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Feb. 14, 1969, Ser. No. 799,422
Int. Cl. B01d *29/38*
U.S. Cl. 210—107 **16 Claims**

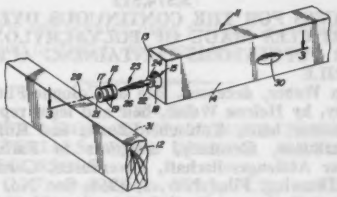


A filter for liquid and a control. The filter element is made up of two concentric perforated cylinders which restrain a very fine wire mesh between them, this assembly being supported in a hollow body. Liquid is fed into the inside of the filter element and flows to an outlet, by way of the perforations, through the mesh. The perforations form cavities which serve as reservoirs on the inside of the mesh. A backwash arm is rotated about an axis at the center of the filter element. The backwash arm has a slot defined by shaped members which sealingly sweep over the inner periphery of the filter element. Thus, debris which accumulates in the perforations is washed back through the slot in the arm and to a waste system by the impetus of the pressure on the downstream side of the filter element. The control is made to actuate the backwash arm at a rate of speed such that it will make a sweep around the inner periphery of the filter element only as required to clean the mesh and maintain flow. This is accomplished by a circuit that senses the fluid pressure drop across the filter. The motor which drives the backwash arm can be driven continuously or intermittently in response to this pressure drop to keep the cavities from filling with debris beyond a predetermined amount. A positive displacement device is connected to the outlet of the backwash arm, to meter the amount of backwash fluid. An interrupter is provided to stop this backwash device as the arm passes over unperforated spots in the filter element.

3,574,510
CONCEALED MEANS FOR JOINING ABUTTING ELEMENTS

Patricio Herman, 1954 Tacoma St., Cuyahoga Falls, Ohio

Filed Mar. 5, 1969, Ser. No. 804,415
Int. Cl. F16b *12/10*
U.S. Cl. 287—20.924 **5 Claims**



A concealed means for joining two abutting elements. The first element has at least an engaging surface and an access surface oriented angularly with respect to the engaging surface. An anchor means is secured within the engaging surface such that the axis thereof extends outwardly from the engaging surface. The second element also has an engaging surface that can be abutted to the engaging surface of the first element. The first element has an ingressive passage that opens through its access surface and communicates with the anchor means. The ingressive passage is oriented obliquely to the axis of the anchor means, and the actual fastening of the first and second elements is achieved by a screw means that extends through the anchor means of the first element and penetrates the engaging surface of the second element. Tightening and loosening the screw means is accomplished by driving means having a flexible shaft for negotiating the oblique intersection of the ingressive passage with the axis of the anchor means and for permitting actuation of the screw means by rotation of the shaft from exteriorly of the first element.

3,574,511
COLORED POTASSIUM SULFATE AND METHOD OF MANUFACTURE
Albert F. Boeglin, Carlsbad, N. Mex., assignor to International Minerals and Chemical Corporation
No Drawing. Filed May 9, 1966, Ser. No. 548,383
Int. Cl. D06p *3/00, 5/00;* C01d *5/00*
U.S. Cl. 8—3 13 Claims

Potassium sulfate crystals containing in the lattice a small amount of dye to impart the desired colour are made by crystallizing the potassium sulfate from a saturated solution of potassium sulfate mother liquor containing a small amount of a sulfate or sulfonate radical-containing dyestuff and a small amount of a sulfate or sulfonate radical-containing surface-active agent.

3,574,512
PROCESS FOR THE CONTINUOUS DYEING OF ARTICLES MADE OF POLYACRYLONITRILE OR COPOLYMERS CONTAINING ACRYLONITRILE
Johann Weber, deceased, late of Cologne-Flittard, Germany, by Helene Weber, heir and legal representative of minor heirs, Kohlscheid-Bank, and Rutger Neeff, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 1, 1968, Ser. No. 773,979
Claims priority, application Germany, Nov. 11, 1967, P 16 19 550.9; Nov. 29, 1967, P 16 19 552.1
Int. Cl. D06p *3/76*
U.S. Cl. 8—4 11 Claims

Process for continuous dyeing of articles of polyacrylonitrile or copolymers containing at least 80% acrylonitrile by impregnating said articles with an aqueous liquor containing cationic dyestuffs and at least one partially or completely hydrogenated thiophen-1,1-dioxide compound.

3,574,513
PRINTING AND DYEING PROCESS
Walther Wolf, Leverkusen, Johannes Eibl, Burscheid-Kaltenherberg, and Karl Wojatschek, Cologne-Dellbrueck, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 10, 1969, Ser. No. 815,191
Claims priority, application Germany, Apr. 20, 1968, P 17 69 210.3
Int. Cl. D06p *5/00, 5/04*
U.S. Cl. 8—4 1 Claim

Cellulose ester and linear polyesters are dyed with disperse dyes from a bath containing N-substituted phthalimides. Alkyl, haloalkyl, acyloxyalkyl, carboxyalkyl alkoxy carbonyl and alkoxy alkyl radicals substituted on the N-group of the phthalimide are examples of the phthalimide.

3,574,514
NAPHTHOIC ACID ARYLAMIDE, AMINOBENZENE-AZO-NAPHTHALENE ALKALI METAL SULFITE MODIFIED FORMALDEHYDE AROMATIC HYDROXY COMPOUND AND OMEGA-SULFOMETHYL - HYDROXYNAPHTHALENE-SULFONIC ACID CONDENSATION PRODUCT FOR DYEING CELLULOSE ACETATE AND AROMATIC POLYESTER
Helmut Arm, Langen, Hasso Hertel, Offenbach (Main), and Rudolf Löwenfeld, Buchschlag, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning
No Drawing. Filed May 3, 1968, Ser. No. 726,579
Claims priority, application Germany, May 5, 1967, F 52,330
Int. Cl. D06p *1/02*
U.S. Cl. 8—44 5 Claims

Dyeing preparations for the manufacture of water-insoluble azo dyestuffs on textile material of aromatic polyesters or triacetyl cellulose consisting of (a) an arylamide of 2,3-hydroxynaphthoic acid, (b) a 4-amino-1-benzene-azonaphthalene, (c) a water-soluble condensation product of an aromatic hydroxy compound and an aromatic-ω-methane-sulfonic acid, and (d) water.

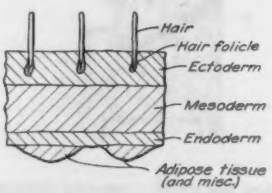
3,574,515
PROCESS FOR DYEING AND PRINTING OF CELLULOSE FIBRE MATERIALS USING A COPPER AMMINE COMPLEX OF TRIMETHYLAMINE-TRICARBOXYLIC ACID
Andreas Huppertz, Cologne-Mulheim, and Gunther Naumann and Walther Wolf, Leverkusen, and Hellmut Berg, Leverkusen-Mathildenhof, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed July 5, 1968, Ser. No. 742,705
Claims priority, application Germany, July 15, 1967, F 52,977
Int. Cl. D06p *3/60*
U.S. Cl. 8—54.2 3 Claims

In the dyeing and printing of cellulose fibre materials, the fibre is treated with an imino-isoindolenine in the presence of a copper ammine complex of trimethylamine-tricarboxylic acid.

3,574,516
DEHAIRING OF HIDES AND SKINS
Eckhart Heidemann, Darmstadt, and Fritz Hahn, Frankfurt am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler
No Drawing. Filed Mar. 28, 1966, Ser. No. 537,671
Int. Cl. C14c *1/06*
U.S. Cl. 8—94.16 7 Claims

A method of dehairing skins and hides consisting of treating the skins and hides with an aqueous solution containing an inorganic per compound and an inorganic base at a pH of about 10 to 13.5 until the hair is sufficiently loosened to permit its mechanical removal from the skins and hides.

3,574,517
CURING AND PRETANNAGE OF HIDES
Don S. Elvrum, 6233 Saylin Lane, Los Angeles, Calif. 90042
Filed July 19, 1967, Ser. No. 654,432
Int. Cl. C14c *1/00, 1/06*
U.S. Cl. 8—94.16 12 Claims



Hides may be cured and pretanned by: treating raw hides with a sodium hydroxide solution so as to react the lipid material in order to cause formation of soaps, limited attack on protein material present in the hides, and swelling of the collagen in the hides; adding sodium

chloride to the sodium hydroxide solution in order to enable this salt to be taken up from the solution by the hides, causing an increase in the strength of the swollen collagen; dehairing the hides; treating the hides with sodium sulphite solution so as to add strength to the swollen collagen; treating the hides with a mixture of a quaternary ammonium salt, and a calcium salt in order to precipitate any soaps present and to place the ammonium salt within the remaining hide material and to separate fascia tissue from the remaining hide material; and pickling the hides with an acid solution so as to effect a size reduction and strengthening of the swollen collagen. If desired, the hides may be bated prior to being pickled. The so-cured hides have properties which are related to the properties of the ammonium salt. The resulting hides can be further treated in accordance with conventional tanning practices.

3,574,518

COLLAGEN MATRIX WATERPROOFING WITH CHROMIUM COMPLEXES CONTAINING RADICALS OF LONG CHAIN HYDROCARBONS AND FLUORINATED HYDROCARBONS AND PRODUCT SO PRODUCED

Peter D. Detomaso, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 537,685, Mar. 28, 1966. This application Dec. 11, 1968, Ser. No. 783,138

Int. Cl. C14c *9/00*

U.S. Cl. 8—94.21 **8 Claims**

A process for improving the dynamic water resistance of a porous collagen fiber matrix treated with a chromium complex capable of imparting water repellency thereto which comprises treating said matrix after tanning and while water wetted with an aqueous float liquor containing a low molecular weight urethane adduct of an organic isocyanate and an alcohol, said adduct having a melting point below about 200° C., a molecular weight below about 10,000, and at least 0.5 urethane groups per 1000 molecular weight of adduct, the weight ratio of said urethane adduct to said chromium complex being from 1/9 to 9/1 and the combined weight of said urethane adduct and said chromium complex being from 1.5 to 5 percent based on the dry weight of said collagen fiber.

3,574,519

METHOD FOR BLEACHING TEXTILES

Robert M. Lincoln, Moylan, and Joseph A. Meyers III, Springfield, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Filed Oct. 2, 1968, Ser. No. 764,639

Int. Cl. D06l *3/02*

U.S. Cl. 8—111 **7 Claims**

Bleaching of textile materials by vapor phase treating the fabric with an organic hydroperoxide as the bleaching agent.

3,574,520

TREATING CELLULOSIC GARMENTS WITH A s-TRIMETHYLOL TRIAZINE TRIOL, BUFFERED MAGNESIUM CHLORIDE, AND METHYLOL STEARAMIDE

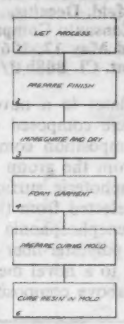
William E. Aldrich, Cranston, R.I., assignor to Warnaco Inc., Ashaway, R.I.

Filed Nov. 2, 1966, Ser. No. 591,488

Int. Cl. D06m *13/10, 13/34, 13/52*

U.S. Cl. 8—115.6 **3 Claims**

A process for producing wrinkle resistant garments and fabrics. The garment or fabric is impregnated with a resin finishing bath comprising s-1,3,5-trimethylol triazine-2,4,6-triol, is partially dried so as to have a moisture content



of 8 to 10% and is cured using pressure at a temperature of about 300 to 350° F. for about two minutes.

3,574,521

MODIFICATION OF CELLULOSIC TEXTILE MATERIALS WITH DIVINYL SULFONE PRECURSORS

Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Paul I. Linden, North Arlington, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 826,133, July 10, 1959, and Ser. No. 51,778, Aug. 25, 1960. This application Jan. 3, 1961, Ser. No. 79,988

Int. Cl. D06m *13/28;* **C08b** *11/04, 19/06*

U.S. Cl. 8—116.2 **11 Claims**

Active hydrogen containing polymers are modified in the presence of an alkaline catalyst with divinyl sulfone precursors.

3,574,522

IN SITU CATALYSIS OF THE REACTION OF CELLULOSE WITH UNSATURATED COMPOUNDS

Stanley P. Rowland, New Orleans, and Mary Ann F. Brannan, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,613

Int. Cl. D06m *13/12, 13/28, 13/40*

U.S. Cl. 8—116.2 **12 Claims**

The present invention relates to novel processes by which substituent groups and crosslinks can be introduced into cellulose and other polymeric compositions containing reactive hydroxyl groups. The novel processes of this invention and the novel product of this invention are based on the discovery that quaternary ammonium and tertiary amino hydroxide groups developed as substituents in polymeric compositions, catalyze the reaction of activated vinyl compounds with the hydroxyl groups of these polymers.

3,574,523

SOLVENT BONDING OF SYNTHETIC FIBERS

Richard E. Hudson, Jr., West Point, Ga., and Walter C. Monk, Jr., Fairfax, Ala., assignors to West Point-Pepperell, Inc.

No Drawing. Continuation of abandoned application Ser. No. 292,113, July 1, 1963. This application Jan. 14, 1969, Ser. No. 802,712

Int. Cl. C09j *5/02;* **D04h** *1/06*

U.S. Cl. 8—130.1 **1 Claim**

Synthetic fibers are bonded together through treatment with a multicomponent liquid which upon initial contact with the fibers is a non-solvent therefor but which upon evaporation of one of the component becomes a fiber solvent.

3,574,524

COMPOSITIONS USEFUL FOR CLEANING ARTICLES COMPOSED OF POLYESTER AND CELLULOSIC FIBERS

Julian J. Hirshfeld, Decatur, Ala., assignor to Monsanto Company

No Drawing. Filed May 12, 1967, Ser. No. 637,902
Int. Cl. B08b *3/00*
U.S. Cl. 8—137 **6 Claims**

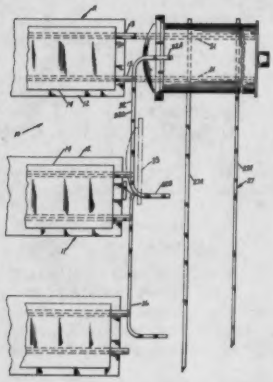
This invention relates to a novel composition useful for washing an article composed of polyester and cellulosic fiber, the composition comprised of a synthetic detergent selected from the group consisting of anionic, nonionic and/or amphoteric surface active compounds, an organic builder selected from the group consisting of amino lower alkylidenephosphonic acids and their water soluble salts and a polyester-fiber swelling agent. Also, the invention relates to a novel method of washing such an article with the above composition.

3,574,525

METHOD AND APPARATUS FOR HIGH TEMPERATURE DYEING

Kenneth R. Dennick, 1161 York Ave., New York, N.Y. 10021

Filed Nov. 12, 1968, Ser. No. 774,905
Int. Cl. D06p *7/00*
U.S. Cl. 8—147 **10 Claims**



A method and apparatus for high temperature dyeing wherein a single pressure vessel is utilized in conjunction with a plurality of dye bath means. The pressure vessel is moveably supported so as to be disposed opposite a dye bath means adapted to be inserted thereinto. A pressure vessel closure for effecting the sealing of the dye bath within the pressure vessel is supported for movement between an operative and inoperative position. In operation one of the dye bath means is being operated upon within the pressure vessel to affect a dyeing operation, while another dye bath means is being prepared for insertion. Upon completion of the dyeing operation the dye bath means within the pressure vessel is removed and the pressure vessel is moved laterally opposite the other dye bath means in position to receive the same to repeat the dyeing operation.

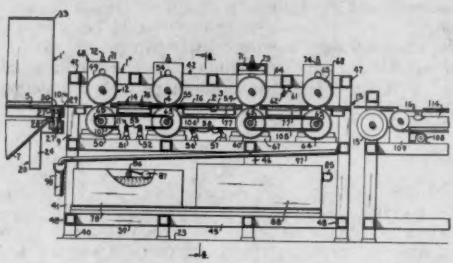
3,574,526

RUG CLEANING APPARATUS AND METHOD

Jeffrey K. Bell, 7845 Summit, Kansas City, Mo. 64114

Filed Apr. 7, 1969, Ser. No. 814,096
Int. Cl. A47l *11/00*; D06g *1/00*
U.S. Cl. 8—149.1 **13 Claims**

Rug cleaning apparatus includes a horizontal resiliently mounted screen positioned to receive and support a rug having a nap or pile side engaging the screen and vibrating means associated with the screen for vibrating the screen and rug thereon for removing foreign material therefrom and collecting same in a collection chamber below the screen where vacuum means removes the foreign material. An elongate frame is positioned adjacent the vibrating screen and carries rug moving means positioned thereon to receive the rug and move same along the frame, said rug moving means being in the form of a plurality of rollers arranged in longitudinally spaced and



aligned pairs with the rollers in each pair being vertically spaced apart. Path defining means guides the moving rug between the vertically spaced pairs of rollers thereby positioning same above a plurality of longitudinally spaced elongate spray bars each having a plurality of spray nozzles for directing overlapping sprays of cleansing and rinsing fluid against the nap side of the rug. Belt conveying means are positioned to receive the rug from the frame and move same adjacent a plurality of heating elements for drying the rug and the belt conveying means moves the heated and dried rug adjacent fan means for cooling same.

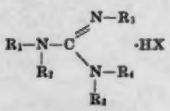
3,574,527

PROCESS FOR THE DYEING OF FIBRE MATERIALS OF POLYACRYLONITRILE OR COPOLYMERS CONTAINING ACRYLONITRILE

Klaus Walz, Leverkusen-Wiesdorf, Walter Hees, Cologne-Hoehenberg, and Mathieu Ouaedvlieg, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft

No Drawing. Filed July 25, 1968, Ser. No. 747,451
Claims priority, application Germany, Aug. 4, 1967, F 53,146
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 **3 Claims**

Process for dyeing fibers containing at least 80% by weight polyacrylonitrile with cationic dyestuffs in level and deep shades by using as dyeing auxiliaries a guanidine compound of the formula



where the R's and X are as defined hereinbelow.

3,574,528

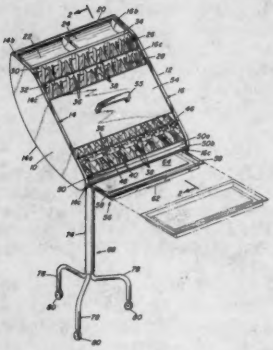
HAIR ROLLER DISPENSER

Michael A. Siano, 58 Scribner Ave., South Norwalk, Conn.

Filed Oct. 22, 1968, Ser. No. 769,504
Int. Cl. A61l *3/00*
U.S. Cl. 21—91 **5 Claims**

The disclosed dispenser is a timesaving device for storing disinfecting and dispensing hair rollers for the type commonly used by ladies' hairdressers. A frame contains a

plurality of roller racks stacked one above the other. Principal ribs running down each roller rack form a plurality of chutes in which hair rollers can be stored and dispensed. The spacing of the roller racks in the frame, and of the principal ribs, provides chutes of varying size to accommodate various size rollers. Secondary ribs are provided between each pair of principal ribs to strengthen the racks, to guide misaligned rollers and to form traps for debris



which would otherwise clog the chutes. A drawer-like tray is provided beneath the roller racks for containing a volatile disinfectant such as formaldehyde. Vapors from the disinfectant are permitted to circulate upward through the dispenser and through perforations in the roller racks to keep the stored rollers in a disinfected condition. The dispenser is made portable by mounting it upon a caster base.

3,574,529

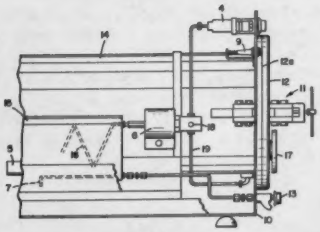
AUTOMATIC STERILIZING AUTOCLAVE

Harold D. Larro, 1865 SW. Fernwood Drive, Lake Oswego, Oreg. 97034

Continuation-in-part of abandoned application Ser. No. 449,541, Apr. 20, 1965. This application Jan. 3, 1969, Ser. No. 788,814

Int. Cl. A61l *3/00*

U.S. Cl. 21—94 **12 Claims**



An autoclave for sterilizing articles by steam under pressure with fully automatic operation throughout a sterilizing cycle. An automatically controlled valve in the air-steam exhaust passageway from the autoclave pressure chamber closes the exhaust passageway only at a preselected temperature in order to first exhaust air from the pressure chamber at the beginning of the sterilizing cycle, and opens the exhaust passageway after a predetermined period at the end of the sterilizing cycle, at which time the heating element is also automatically cut off. During the sterilizing cycle, non-sterile pockets of air in the pressure chamber are automatically purged through the air-steam exhaust passageway by the automatic control valve.

3,574,530

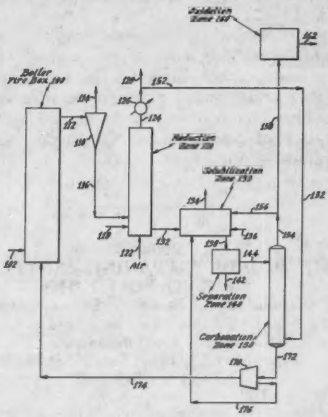
METHOD OF REMOVING SULFUR DIOXIDE FROM WASTE GASES

Ernesto Suriani, Freehold, N.J., and Thomas H. Milliken, New York, N.Y., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 2, 1967, Ser. No. 672,166

Int. Cl. B01d *53/34*

U.S. Cl. 23—2 **24 Claims**



A process for the conversion of solids containing alkaline earth metal and sulfur values to the corresponding alkaline earth metal carbonate and an enriched hydrogen sulfide-containing gaseous product which includes a multistage conversion of alkaline earth metal sulfide to the indicated products. Solids comprising alkaline earth metal sulfide are slurried in an aqueous medium and the resulting slurry is contacted with a gas comprising hydrogen sulfide to produce an aqueous solution of the alkaline earth metal hydrosulfide, any water insoluble impurities originally associated with the metal sulfide remaining suspended in the aqueous medium. The aqueous solution of alkaline earth metal hydrosulfide, after separation of any such impurities, is then contacted with carbon dioxide to produce alkaline earth metal carbonate and an enriched hydrogen sulfide-containing gas, a portion of the latter being used to form the aqueous solution of alkaline earth metal hydrosulfide, and the remaining portion being converted to elemental sulfur or sulfur dioxide. The solids comprising alkaline earth metal sulfide may be derived by reduction of alkaline earth metal sulfate including native and byproduct sulfate such as gypsum, and alkaline earth metal sulfate produced by treatment of sulfur dioxide-containing gases or sulfate-containing waters with alkaline earth metal carbonate or oxide.

3,574,531

STRONTIUM EXTRACTION PROCESS

Wallace W. Schulz, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed May 15, 1969, Ser. No. 825,073

Int. Cl. C22b *59/00;* **C01f** *11/00, 17/00*

U.S. Cl. 23—18 **7 Claims**

A process for recovering strontium and lanthanide rare earth values from an aqueous nuclear reactor fuel reprocessing waste solution containing these and other values by adjusting the pH, adding a buffering agent and a complexing agent, which will complex all cations present except the alkali and alkaline earth metals, to the waste solution and contacting the aqueous feed solution so obtained with an organic extractant consisting of di(2-ethylhexyl) phosphoric acid and dibutyl butyl phosphonate in a hydrocarbon diluent, whereby the strontium and lanthanide rare earth values are extracted.

3,574,532
WASH TREATMENT TO RESTORE THE DEGRADED D2EHPA-TBP USED IN FISSION PRODUCT EXTRACTION

Wallace W. Schulz, Richland, and Samuel J. Beard, Kennewick, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Mar. 20, 1969, Ser. No. 809,032
Int. Cl. C22b *59/00*
U.S. Cl. 23—22 **1 Claim**

A process is disclosed for restoring the cerium (IV) extraction capacity of a chemically and/or radiolytically degraded solvent consisting of di(2-ethylhexyl) phosphoric acid and tributyl phosphorate in a hydrocarbon diluent. The degraded solvent is treated with an aqueous solution of potassium permanganate and a mineral acid, preferably nitric acid.

3,574,533
METHOD OF PREPARING BERYLLIUM NITRATE SOLUTIONS

Paul T. Godeslabois, Boulder, Colo., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed May 13, 1969, Ser. No. 824,207
Int. Cl. C01f *3/00*
U.S. Cl. 23—102 **5 Claims**

A method for obtaining beryllium nitrate solutions comprising first dissolving beryllium in a methyl alcohol-carbon tetrachloride mixture, filtering the resulting solution, evaporating the filtrate to a dry residue, and dissolving the residue in nitric acid.

3,574,534
PRODUCTION OF SODIUM TRIPOLYPHOSPHATE HEXAHYDRATE

Kenneth J. Shaver, 32 Millbrook Lane 63122, and Chung Yu Shen, 9528 Laguna Drive 63132, both of St. Louis, Mo.

No Drawing. Filed July 25, 1967, Ser. No. 655,780
Int. Cl. C01b *25/30, 25/38*
U.S. Cl. 23—107 **6 Claims**

An improvement to the process wherein a strong base is added to an aqueous medium containing sodium trimetaphosphate to thereby form a hydrated sodium tripolyphosphate product, comprising adding an organic compound selected from the group consisting of nitrilotriacetic acid, ethylenediamine tetraacetic amino tri(methylene phosphonic acid), 1-hydroxy ethylidene diphosphonic acid, saturated polycarboxylic acids containing from 4 to 12 carbon atoms, the water soluble salts of said acids and mixtures thereof prior to adding the strong base; the weight ratio of said organic compound to said sodium trimetaphosphate being from about 1:1000 to about 2:1, respectively.

3,574,535
PROCESS FOR MANUFACTURING SODIUM TRIPOLYPHOSPHATE

Iuliu Molodovan and Marinela Man, Bucharest, Rumania, assignors to Ministerul Industriei Chimice, Bucharest, Rumania

No Drawing. Filed June 18, 1968, Ser. No. 737,821
Claims priority, application Rumania, June 20, 1967, 54,075
The portion of the term of the patent subsequent to Sept. 9, 1986, has been disclaimed
Int. Cl. C01b *25/30, 25/38*
U.S. Cl. 23—107 **1 Claim**

The novel method of manufacturing sodium tripolyphosphate according to this invention comprises the countercurrent extraction of wet process phosphoric acid with 28 to 32% P_2O_5 content with a polar organic solvent such as n-butanol, preventing thus the disadvantages related to the multistep purification used in the ordinary process. The organic phase, formed of n-butanol, phosphoric acid and water is neutralized, as such or after a more advanced purification to remove SO_4^{2-} ions with CaO or $CaCO_3$, at pH=7.2 to 7.5 and at a temperature of 60° to 70° C. in a single step with a Na_2CO_3 or NaOH solution, used as such or after saturation at 50° C., to obtain a molecular mixture NaH_2PO_4:Na_2HPO_4 of 1:2. The crystal suspension that is separated from butanol by centrifugation, is dried, homogenized by grinding, and calcined.

The quality of the product is comparable with that of sodium tripolyphosphate obtained from electrothermic phosphoric acid.

3,574,536
SODIUM ALUMINUM PHOSPHATE COMPOUNDS

Reginald E. Vanstrom, Dobbs Ferry, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed June 26, 1968, Ser. No. 740,082
Int. Cl. C01b *25/30;* **A21d** *2/00*
U.S. Cl. 23—107 **3 Claims**

A crystalline sodium aluminum acid orthophosphate is provided by reacting an alkali metal compound with an inorganic aluminum compound and a dilute solution of phosphoric acid. The dilute solution of phosphoric acid will be between about 40% and 75% by weight. The proportion of each component is selected to provide a reaction product having a ratio of Na:Al:P of about 2:3:6.

3,574,537
PROCESS FOR THE SEPARATION OF USEFUL COMPOUNDS FROM WASTE OF THE ALUMINUM INDUSTRY

Jul-Hsiung Tsai, 10, Lane 101 Liao Ning St., Taipei, China

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,166
Int. Cl. C01b *33/00, 33/16, 33/32*
U.S. Cl. 23—110 **1 Claim**

Process for the treatment of red-mud to extract Fe_2O_3, Al_2O_3, SiO_2 and Na_2O, in which SO_2 is passed into a solution of red-mud and the Fe_2O_3 separated therefrom. The liquor is heated until a pH of 4.5 to 5.0 is reached forming a precipitate of SiO_2 and $Al(OH)SO_3$. The precipitate is separated from the liquor which is concentrated to crystallize out Na_2SO_3. Sulphuric acid is added to the separated precipitate forming water-soluble aluminum salts. SiO_2 remains as a residue and is removed from solution. Water and a potassium or ammonium salt is added to the liquor from which the corresponding alum may be crystallized out. The precipitate of SiO_2 may be further treated to obtain silica gel or water glass.

3,574,538
PROCESS FOR PREPARING HIGH SILICA FAUJASITE

Carl Vance McDaniel, Laurel, Md., and Heyman Clarke Duecker, Marion, Ind., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,508
Int. Cl. C01b *33/28*
U.S. Cl. 23—112 **5 Claims**

A process for preparing faujasite having a silica-alumina ratio above about 4.5 by treating a mixture of clay, alkali metal hydroxide, alkali metal silicate, and nucleation centers (zeolite seeds) and heating to convert to the zeolite desired. The initial reactant mixture may be prepared to have a composition equal to or near that of the desired product.

3,574,539
METHOD OF MANUFACTURING CRYSTALLINE MORDENITE

Daniel Domine, Meudon, and Jean Quobex, Paris, France, assignors to L'Air Liquide, Societe Anonyme, pour l'Etude et l'Exploitation des Procedes Georges Claude

Continuation of application Ser. No. 564,146, July 11, 1966, which is a continuation-in-part of application Ser. No. 468,480, June 30, 1965. This application Sept. 27, 1968, Ser. No. 768,610

Claims priority, application France, July 21, 1964, 982,465, Patent 1,411,753; July 12, 1965, 22,354, Patent 88,553, 22,355, Patent 88,554

Int. Cl. C01b 33/28

U.S. Cl. 23—112 8 Claims

A process is disclosed for synthesizing crystalline mordenite by a hydrothermal treatment. A water dispersion of a powdery amorphous alkali metal silicoaluminate having a similar analysis to that of mordenite is treated under pressure for at least several hours at a temperature of at least 100° C. and at an initial pH between 11 and 13.3.

3,574,540
PROCESS FOR THE PRODUCTION OF BLANC FIXE

Arvel O. Franz and Fred F. Lester, Cartersville, Ga., assignors to Chemical Products Corporation, Cartersville, Ga.

No Drawing. Filed May 6, 1968, Ser. No. 727,077

Int. Cl. C01f 11/46

U.S. Cl. 23—122 15 Claims

A process for preparing blanc fixe from barium carbonate which contains sulfur impurities, comprising reacting barium carbonate with sulfuric acid, in an environment having a strong oxidation potential and in the presence of a minor amount of an acid which forms a soluble barium salt. Substantially all of the sulfur present in the barium carbonate as impurities should be either in the form of barium sulfate or in the form of compounds oxidizable by iodine at room temperature. Blanc fixe so produced is particularly suitable for use in coating photographic papers.

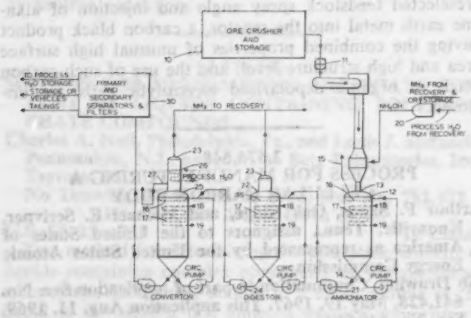
3,574,541
NONFERROUS METAL CONCENTRATION AND SEPARATION PROCESS

David O. Hines, 275 MacArthur Blvd., Oakland, Calif. 94610

Filed Jan. 27, 1969, Ser. No. 794,173

Int. Cl. C01g 3/02; C22b 3/00, 15/08

U.S. Cl. 23—147 3 Claims



This invention is a non-ferrous metal ore beneficiation process wherein non-ferrous metal bearing compounds are converted chemically to new compounds having a greater density than the original ones. The process frees other metals in combination with the non-ferrous metal compounds during the concentration process. The change in density of the non-ferrous metal compounds and separation of the metallic elements in the ore facilitates the separation of the compounds and metallic elements by means of spiral separators or other similar devices. The beneficiation process comprises three stages: the ammoniation stage, the digestion stage and the conversion stage. The steps are carried out at atmospheric pressure, temperatures above 214° Fahrenheit are not required, and elemental copper is not precipitated when the process is used on copper bearing ores.

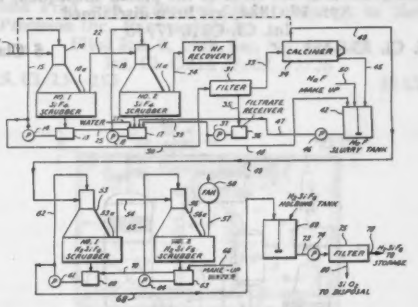
3,574,542
PROCESS FOR RECOVERY OF HF AND H_2SiF_6 FROM GASES CONTAINING HF AND SiF_4

Rufus G. Hartig, 230 Hillsboro Hotel, Dover, Fla. 33602

Filed Mar. 5, 1969, Ser. No. 804,519

Int. Cl. C01b 67/00, 7/22, 33/08

U.S. Cl. 23—153 2 Claims



Processes for recovery of HF and H_2SiF_6 from gas mixtures containing HF and SiF_4, wherein SiF_4 is recovered as H_2SiF_6, and HF is separately recovered.

3,574,543
CARBONACEOUS PROCESS FOR RECOVERING SULFUR VALUES

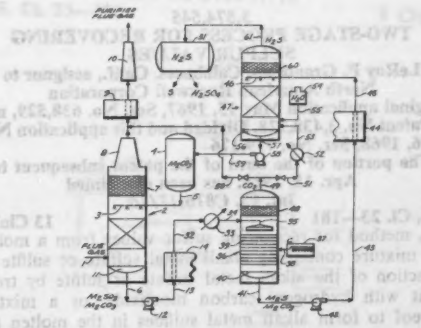
Laszlo A. Heredy, Canoga Park, Calif., assignor to North American Rockwell Corporation

Original application May 15, 1967, Ser. No. 638,365, now Patent No. 3,438,727, dated Apr. 15, 1969. Divided and this application Nov. 26, 1968, Ser. No. 779,118

The portion of the term of the patent subsequent to Apr. 15, 1986, has been disclaimed

Int. Cl. C01b 17/16

U.S. Cl. 23—181 10 Claims



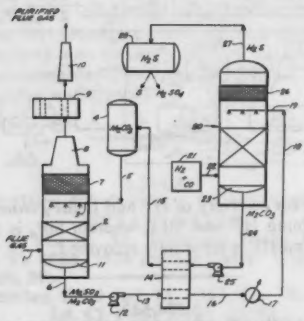
A method for recovering sulfur values from a molten salt mixture containing alkali metal sulfate or sulfite by either a one-stage or two-stage treatment of the molten

solution. For single-stage treatment, the alkali metal sulfate- or sulfite-containing molten solution is reacted with a hydrocarbonaceous composition, preferably carbon and hydrogen, to form hydrogen sulfide and alkali metal carbonates in the molten salt. For the two-stage treatment, the sulfate- or sulfite-containing molten solution is first treated with a carbonaceous material, preferably carbon, to form alkali metal sulfide, which is then treated with a gaseous mixture containing steam and carbon dioxide to form hydrogen sulfide and alkali metal carbonates in the molten salt.

3,574,544
SINGLE-STAGE PROCESS FOR RECOVERING SULFUR VALUES

Laszlo A. Heredy, Canoga Park, and Donald E. McKenzie and Samuel J. Yosim, Woodland Hills, Calif., assignors to North American Rockwell Corporation

Original application May 15, 1967, Ser. No. 638,528, now Patent No. 3,438,722, dated Apr. 15, 1969. Divided and this application Nov. 26, 1968, Ser. No. 779,172
The portion of the term of the patent subsequent to Apr. 15, 1986, has been disclaimed
Int. Cl. C01b *17/16*
U.S. Cl. 23—181 **5 Claims**



A method for recovering sulfur values from a molten salt mixture containing alkali metal sulfates or sulfites by reacting the alkali metal sulfate- or sulfite-containing molten solution in a single-stage treatment with a gaseous mixture containing hydrogen and either carbon monoxide or carbon dioxide to form hydrogen sulfide and alkali metal carbonates in the molten salt.

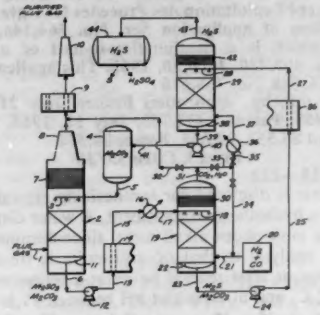
3,574,545
TWO-STAGE PROCESS FOR RECOVERING SULFUR VALUES

LeRoy F. Grantham, Calabasas, Calif., assignor to North American Rockwell Corporation

Original application May 15, 1967, Ser. No. 638,529, now Patent No. 3,438,728. Divided and this application Nov. 26, 1968, Ser. No. 779,176
The portion of the term of the patent subsequent to Apr. 15, 1986, has been disclaimed
Int. Cl. C01b *17/16*
U.S. Cl. 23—181 **13 Claims**

A method for recovering sulfur values from a molten salt mixture containing alkali metal sulfate or sulfite by reduction of the alkali metal sulfate or sulfite by treatment with hydrogen, carbon monoxide, or a mixture thereof to form alkali metal sulfides in the molten salt mixture, and treatment of the molten salt mixture containing alkali metal sulfides with a gaseous mixture containing steam and carbon dioxide to form hydrogen sulfide and alkali metal carbonates in the molten salt.

The process may also be separately utilized for recovering sulfur values from a molten salt containing as reactive component alkali metal sulfides by treating the



molten salt mixture with a gaseous mixture containing carbon dioxide and steam to form hydrogen sulfide and alkali metal carbonates in the molten salt.

3,574,546
MANUFACTURE OF FINELY DIVIDED REFRACTORY OXIDES USING CONTROLLED AMOUNTS OF OXYGEN IN PLASMA JET REACTOR

Joseph Francis Skrivan, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 17, 1965, Ser. No. 480,494
The portion of the term of the patent subsequent to Sept. 20, 1983, has been disclaimed
Int. Cl. C01g *1/02, 23/04*
U.S. Cl. 23—202 **8 Claims**

This invention relates generally to an improved plasma jet process for making particulate oxides of refractory metals and metalloids. More particularly, it relates to an improvement in the high temperature plasma jet process for producing finely divided titanium oxide.

3,574,547
HIGH STRUCTURE, HIGH SURFACE AREA CARBON BLACK

Fletcher A. Hinson, Jr., Portland, Tex., assignor to Ashland Oil Inc., Houston, Tex.

Filed July 12, 1966, Ser. No. 564,667
Int. Cl. C09c *1/48*
U.S. Cl. 23—209.2 **4 Claims**

A furnace carbon black process including the use of a preselected feedstock spray angle and injection of alkaline earth metal into the reactor, a carbon black product having the combined properties of unusual high surface area and high structure level, and the use of such carbon black in organic depolarized electrolytic cells are disclosed.

3,574,548
PROCESS FOR MANUFACTURING A CELLULAR CARBON BODY

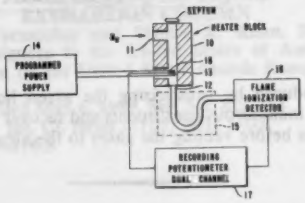
Arthur F. Sands, Oak Ridge, and Michael E. Scrivner, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Continuation-in-part of application Ser. No. 641,428, May 19, 1967. This application Aug. 11, 1969, Ser. No. 849,204
Int. Cl. C01b *31/02*
U.S. Cl. 23—209.4 **9 Claims**

A rigid carbon foam is prepared by admixing furfuryl alcohol which has been partially polymerized so as to include less than about 12 percent free or unreacted furfuryl alcohol with a foaming agent such as a two-component polyurethane system for producing a cellular mass. This

mass is then cured and subsequently carbonized at a temperature of about 1000° C. to 2500° C. to provide a product of essentially pure carbon that is characterized by its cellular structure, dimensional stability in environments of changing humidity, a density in a range of about 0.02 to 0.80 gram per cubic centimeter, and a compressive strength which may be up to about 10,000 pounds per square inch. The density can be increased up to about 1.0 gram per cubic centimeter with the addition of about 15 to 20 weight percent graphite flour.

3,574,549
MICROANALYZER FOR THERMAL STUDIES
Frank T. Eggertsen, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed Feb. 20, 1967, Ser. No. 617,337
Int. Cl. G01n *25/20, 25/24*
U.S. Cl. 23—230 **9 Claims**



A highly sensitive microanalyzer for determining the thermal stability, vapor pressure, volatile content of samples, and the hydrocarbon yield versus temperature pattern of oil shales and other organic-bearing samples. The instrument consists of a pyrolyzer combined directly with a sensitive detector operated at a high temperature.

3,574,550
MEANS OF IDENTIFYING CRUDE OIL AND OTHER MATERIALS
Kenneth A. Scott, Swarthmore, and Roger M. Bean, Glen Mills, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Oct. 18, 1968, Ser. No. 768,916
Int. Cl. C10m *1/54;* **G01n** *33/24;* **G21h** *5/00*
U.S. Cl. 23—230 **4 Claims**

A method of identifying petroleum compounds by adding thereto minute quantities of metallic phthalocyanines, complexes of asphaltenes and metals, or mixtures of same and determining the presence of said added components by neutron activation.

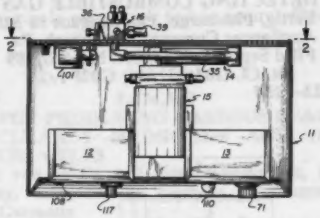
3,574,551
METHOD FOR DETERMINING PHOSPHATE CONTENT OF LIQUIDS CONTAINING POLYPHOSPHATE COMPOUNDS
Charles A. Noll, Philadelphia, Pa., and Louis J. Stefanelli, Pennsauken, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.
No Drawing. Filed Dec. 9, 1968, Ser. No. 782,472
Int. Cl. G01b *25/26;* **G01n** *33/18*
U.S. Cl. 23—230 **10 Claims**

Test method for determining the phosphate content of liquids containing complex phosphates or polyphosphate compounds, comprising adding to a small sample of the liquid to be tested a first aqueous solution comprising a water soluble ferric salt, an alkali metal halide, an alkali metal salt of a lower fatty acid and a first lower fatty acid. The resulting solution is then allowed to mix and a second solution comprising a hydroxybenzoic acid and a second lower fatty acid is added thereto. The color intensity of the resulting solution is then measured and compared to a known standard.

3,574,552
COLORIMETRIC DOSIMETER FOR NITROGEN DIOXIDE
Robert F. Rakowski, Rochester, N.Y., assignor to the United States of America as represented by the Secretary of the Air Force
No Drawing. Filed Jan. 31, 1969, Ser. No. 795,673
Int. Cl. G01n *21/12, 21/20, 31/22*
U.S. Cl. 23—232 **3 Claims**

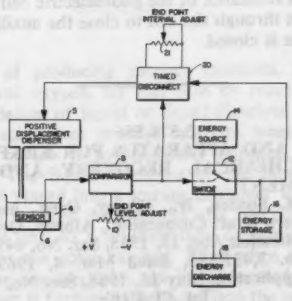
Dosimeter strips for nitrogen dioxide are prepared by dipping a supporting material into an alcoholic solution of diphenylamine and oxalic acid trihydrate. When dry, the strips are used to estimate the concentration-time product of an exposure to nitrogen dioxide by comparing the color which develops on the strips with a set of color standards. Strips may be worn on the lapels of workers liable to exposure to toxic amounts of nitrogen dioxide.

3,574,553
FLUID ANALYZER
Herbert Weitz, Scotch Plains, Roderic Spencer, Plainfield, and Fred Reh, Fanwood, N.J., assignors to Howard Precision Inc., Fanwood, N.J.
Filed Jan. 8, 1968, Ser. No. 696,215
Int. Cl. G01n *31/02, 21/26*
U.S. Cl. 23—253 **32 Claims**



A fluid analyzer which periodically, automatically mixes a fluid sample with a test reagent, analyzes alterations in light transmission characteristics of the mixture produced thereby by means of a photo-sensitive, signal generating sensor which feeds and controls response means such as a make-up chemical feeder, an alarm or a recorder, and automatically cleanses the optical surfaces.

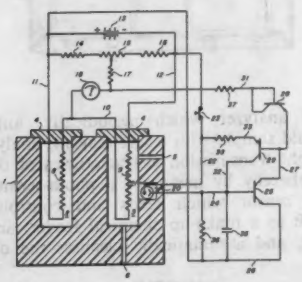
3,574,554
CONTROLLED RATE DISPENSER
Edward A. Berry, Arcadia, and Le Roy D. Barter, Fullerton, Calif., assignors to Beckman Instruments, Inc.
Filed June 2, 1969, Ser. No. 836,686
Int. Cl. G01n *31/18*
U.S. Cl. 23—253 **9 Claims**



There is disclosed a dispensing apparatus having a controlled dispenser mechanism for adding a first substance

to a second substance thereby forming a mixture at a rate determined by a preset mixture end point adjustment. A mixture sensor is connected to a comparator to produce a comparator output signal when the sensor signal exceeds a preset mixture end point level. The comparator output signal is connected to activate a switching device whereby the dispenser mechanism is disconnected from an activating source of energy and connected to an energy discharge device. An energy storage device is attached to the dispenser mechanism and by the activated switch device is connected to the energy discharge device to provide a decaying source of energy to the dispenser mechanism thereby slowing the dispensing rate. In response to the sensor signal dropping below the mixture end point, the source of energy is again connected by the switch device to the dispenser mechanism. A timed disconnect is connected to the comparator output and in response to the sensor signal exceeding the mixture end point level for a preset end point interval disconnects the dispenser mechanism from the switch device to end the dispensing action until reset for the next cycle.

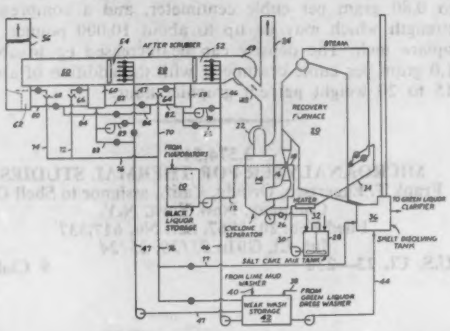
3,574,555
RADIATION SENSITIVE CIRCUIT FOR DETECTING COMBUSTIBLE GAS
Glenn H. Fertig, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Sept. 26, 1969, Ser. No. 861,359
Int. Cl. G01n *31/10*; G02f *1/28*
U.S. Cl. 23—254 **8 Claims**



A photoelectric cell is focused on the catalytic detector filament of a combustible gas indicator, in which a meter is operated by changes in the electrical resistance of the filament. A normally open auxiliary circuit also is connected with the meter for operating it independently of the filament. Whenever the filament glows, which causes the electrical resistance of the photoelectric cell to change, current flows through the cell to close the auxiliary circuit and maintain it closed.

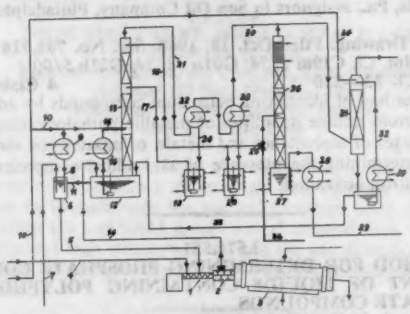
3,574,556
PROCESS AND APPARATUS FOR KRAFT PULP MILL CHEMICAL RECOVERY AND ODOR ABATEMENT
Winslow H. Buxton, Jr., Albany, Oreg., assignor to Western Kraft Corporation, Albany, Oreg.
Original application Apr. 19, 1965, Ser. No. 449,102, now Patent No. 3,431,165, dated Mar. 4, 1969. Divided and this application May 15, 1968, Ser. No. 739,961
Int. Cl. C10b
U.S. Cl. 23—262 **8 Claims**

Apparatus is incorporated in a kraft pulp mill for diverting the gases from the discharge stack of the recovery furnace to an afterscrubber in which the gases are sprayed with the alkaline weak wash liquor resulting from the washing of calcium carbonate mud and solid



dregs produced by causticizing the green liquor, to remove the malodorous constituents and recover solid chemical values before venting the gases to the atmosphere.

3,574,557
APPARATUS FOR THE CONTINUOUS PRODUCTION OF HYDROFLUORIC ACID
Renato Gentilli, Muttenz, Switzerland, assignor to Buss Aktiengesellschaft, Basel, Switzerland
Filed Feb. 26, 1968, Ser. No. 708,310
Claims priority, application Switzerland, Oct. 17, 1967, 14,581/67
Int. Cl. C01b *7/22*
U.S. Cl. 23—263 **3 Claims**



Apparatus for the continuous production of hydrofluoric acid from fluorspar and sulphuric acid having means for mixing and kneading fluorspar with a hot premixture of hot washing acid returned from the hot gas scrubber, fresh pre-heated sulphuric acid and oleum, said kneading and mixing performed in a heated continuous kneader as first part of a three-stage reactor wherein the gas evolution-reaction commences in the first part and is to a major degree continued in a heated second part under agitation, the second part serving as degasifier for the reaction which is terminated in the final reactor where the mixture is heated to complete the conversion of anhydrite. The hot gases evolved in the first and third part of the reactor join the gases evolved in the second part of the reactor,

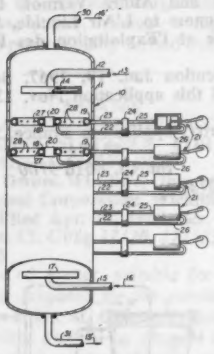
functioning also as a dust catcher. The hot gases then go to a scrubbing and stripping column where recycled washing acid absorbs heat and impurities. The gases are stripped at the same time of hydrogen fluoride. The still hot gases are then lead to a scrubbing section employing first impure hydrofluoric acid and then pure hydrofluoric acid which absorb further impurities. Pure hydrogen fluoride is stripped. The residual warm gases go to a fractional condensation stage where substantial amounts of hydrofluoric acid of industrial purity are collected and volatile impurities with some hydrogen fluoride are bled off for conventional absorption with sulphuric acid and recycling. The technically pure hydrogen fluoride can be easily purified further by distillation under pressure to yield hydrofluoric acid of maximum purity.

3,574,558

JET-MIXED LIQUID-LIQUID EXTRACTION COLUMN

Theodore Vermeulen and Daniel R. Kahn, Berkeley, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed May 6, 1969, Ser. No. 822,212
Int. Cl. B01d *11/04*; B01f *5/02*
U.S. Cl. 23—270.5 **7 Claims**



A jet-mixed extraction column which incorporates the advantages of existing column-type extractors, while eliminating the need for internal moving parts. The column provides high rates of mass transfer, with only normal or even decreased extents of unwanted longitudinal dispersion compared to various prior column-type extractors. The column utilizes uniformly spaced, horizontal, tubular jetting and intake rings at the inner and outer boundaries of an annular cross-section. At each level, both rings are perforated so as to promote nearly straightline radial flow between the jetting and intake rings. Externally these rings are connected by way of a centrifugal circulating pump or a double-action reciprocating pump.

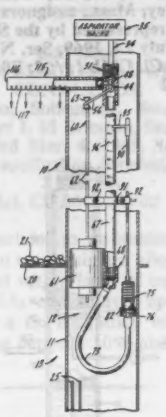
3,574,559

BRINE SYSTEM

Benjamin H. Kryzer and Edward J. Tischler, St. Paul, Minn., assignors to Ecodyne Corporation, Chicago, Ill.

Filed July 3, 1968, Ser. No. 742,348
Int. Cl. B01f *1/00*; C01d *3/04*
U.S. Cl. 23—272 **3 Claims**

A brine valve and spray system, including a control valve arrangement which precisely measures a pre-selected amount of brine draw and brine tank refill. A spray head associated with the valve arrangement distributes



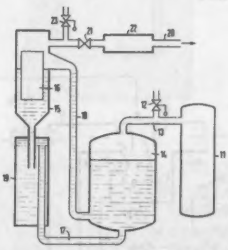
refill water evenly over a salt bed to assure efficient brine formation.

3,574,560

DEVICE FOR PRODUCING GASEOUS REACTANTS PARTICULARLY HYDROGEN AND OXYGEN FOR FUEL CELLS

Ferdinand von Sturm and Hans Kohlmüller, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 2, 1968, Ser. No. 780,426
Claims priority, application Germany, Dec. 2, 1967, P 16 67 277.8
Int. Cl. B01j *7/02*
U.S. Cl. 23—282 **4 Claims**

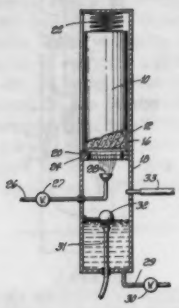


Method of producing gaseous reactants, particularly hydrogen and oxygen, for fuel cells by reaction or catalytic dissociation of liquid or liquid-dissolved substances, with solid substances or solid catalysts, whereby the development of gas is automatically adjusted to the gas consumed. The liquid substance or the liquid-dissolved substance is placed into a storage container which is connected with a sealed gas chamber and also connected, via at least one line, to a reaction tube containing the solid substance or the solid catalyst. Thus when the pressure drops in the reaction tube, the liquid located in the storage container is further compressed into the reaction tube and when the pressure in the reaction tube rises, the liquid is either completely or partially returned to the storage container.

3,574,561
OXYGEN GENERATOR SYSTEM UTILIZING ALKALI METAL PEROXIDES AND SUPEROXIDES

Russell J. Nickerson, Mystic, Conn., and Thomas V. Bolles, Wellesley, Mass., assignors to the United States of America as represented by the Secretary of the Navy

Filed July 24, 1969, Ser. No. 844,527
Int. Cl. C01b *13/02;* B01j *7/02*
U.S. Cl. 23—282 4 Claims

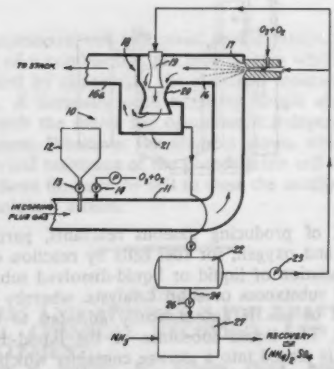


Oxygen is obtained by watering an alkali metal peroxide or superoxide, singly or as a mixture of materials, by spraying water upward onto the chemical contained in a downwardly directed elongated cartridge and providing for gravity escape of the sprayed water plus hydroxide product, thus affording control over the rate of reaction and by funneling the released oxygen to a delivery tube.

3,574,562
APPARATUS FOR REMOVAL OF SULFUR DIOXIDE FROM WASTE GASES

Masayuki Kawahata, Scotia, N.Y., assignor to General Electric Company

Filed Nov. 29, 1968, Ser. No. 779,807
Int. Cl. B01j *9/12, 9/16, 9/20*
U.S. Cl. 23—284 4 Claims



Apparatus for removal of sulfur dioxide from waste gases is connected to the exhaust of a flue gas system, in which a chemical reaction promoted by ozone is brought about between oxygen and sulfur dioxide both in the presence of solid catalyst and in the presence of catalyst in solution. Equipment at a series of stations may sequentially introduce into the hot gas flow (a) finely divided manganese dioxide, air (or oxygen) and ozone, (b) an ozone-entrained spray of an aqueous solution of manganese sulfate and (c) a jet of water or of the same aqueous solution to remove any manganese oxide powder or liquid particles entrained in the gas flow. The manganese sulfate solution is recovered and recirculated until it attains a concentration practical for sulfate recovery.

3,574,563
BERYLLIUM HYDRIDE COMPOUNDS

Frank C. Gunderloy, Jr., Woodland Hills, Louis R. Grant, Jr., Los Angeles, Ross I. Wagner, Woodland Hills, and Cliff Y. Fujikawa, Los Angeles, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed May 12, 1965, Ser. No. 455,676
Int. Cl. C01b *6/24*
U.S. Cl. 23—361 4 Claims

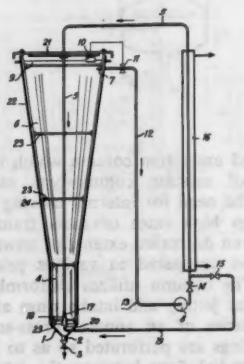
1. The process of forming beryllium hydride compounds according to the reaction of $Be(BH_4)_2$ with AlRR'R'' wherein, R, R' and R'' are selected from the class consisting of H and alkyl radicals of 1 to 8 carbon atoms and wherein at least one of said R's is an alkyl group.

4. $(BeH_2)_n(BH_3)_2$ wherein n varies from 3 to 100.

3,574,564
APPARATUS FOR THE CONTINUOUS PREPARATION OF CRYSTALLINE SUBSTANCES

Herve Olivier and Andre Vermot, Chalon-sur-Saone, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude

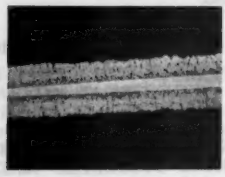
Original application Jan. 19, 1967, Ser. No. 610,267. Divided and this application Nov. 13, 1969, Ser. No. 876,387
Claims priority, application France, Feb. 15, 1966, 49,644
Int. Cl. B01d *9/00*
U.S. Cl. 23—273 5 Claims



Equipment for continuously precipitating crystalline substance of predetermined dimensional regularity, quality and quantity including a reactor having a portion increasing in diameter from bottom to top with a tube entering from the top and exiting into the reactor near the bottom thereof, the tube increasing in diameter near the lower part of the reactor, and a second tube entering near the bottom and extending upwardly along an axis which is in alignment with the first tube and exiting at a point below the end thereof, so that a main stream of mother liquor can be introduced through the first tube

in a downwardly direction and a secondary stream of mother liquor can be introduced through the second tube to yield a zone of substantially no speed at the lower end of the reactor.

3,574,565
COMPOSITE FILAMENT
Robert M. Paine, Cleveland, Ohio, assignor to The Brush Beryllium Company, Cleveland, Ohio
Filed Jan. 24, 1968, Ser. No. 701,042
Int. Cl. B32b *15/02*
U.S. Cl. 29—194 1 Claim



A process for the continuous formation of composite filaments utilizing a continuous filament substrate and a metal capable of being deposited from the vapor state, wherein said filament is passed through a confined source of metal vapor, the deposit being built up in layers through succeeding passes, whereby composite filaments are produced, the process being carried out under vacuum.

3,574,566
NITROGEN- AND PHOSPHORUS-CONTAINING COMPOSITION SUITABLE FOR APPLICATION TO METAL SURFACES
Charles E. Dwors, Wickliffe, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Filed Apr. 18, 1968, Ser. No. 722,198
Int. Cl. G08g *17/10, 17/133*
U.S. Cl. 29—195 25 Claims

A composition of matter, suitable for application to metal surfaces, is prepared by the reaction of (A) the product of the reaction of a benzene polycarboxylic reactant, a polyhydric alcohol or phenol, and phosphoric acid, phosphorus or a mixture thereof, with (B) an aliphatic amine material having at least about 8 carbon atoms. The composition is especially useful as a component of siccative organic coating compositions.

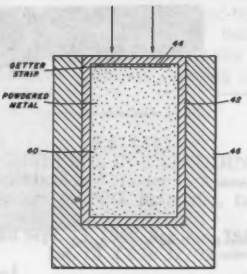
3,574,567
WEAR RESISTANT MEMBERS
Yoshihiro Hatanaka and Hidetaka Mase, Himeji-shi, Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Himeji-shi, Hyogo-ken, Japan
Filed June 11, 1968, Ser. No. 736,210
Claims priority, application Japan, June 26, 1967, 42/54,835; Nov. 27, 1967, 42/99,299
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 5 Claims

Wear resistant members, especially suitable for defining a coin passage of a coin counting and (or) sorting machine are made of supporting members and a wear resistance surface made of ceramics or cermet and bonded to supporting members. The wear resistant surface is divided into a plurality of segments to prevent deformation or cracking.

3,574,568
INSULATED, ELECTRICAL ALUMINIUM CONDUCTOR
Hans-Olof Hansson, Sollentuna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
No Drawing. Filed Mar. 4, 1969, Ser. No. 804,311
Claims priority, application Sweden, Mar. 6, 1968, 2,938/68
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 1 Claim

This invention pertains to an insulated electrical conductor of aluminium or aluminium alloy. The area of the conductor is covered with a layer of unalloyed tin with a thickness of 0.1μ–0.5μ and a layer applied outside said layer consisting of a tin lead alloy with a thickness of 0.1μ–4.0μ containing between 10% and 80% tin and the remainder lead.

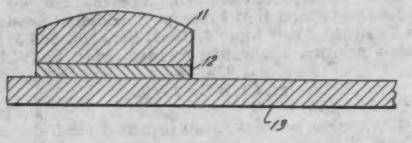
3,574,569
METAL ARTICLES
Milton B. Vordahl, Henderson, Nev., assignor to Crucible Inc.
Application Mar. 16, 1967, Ser. No. 638,164, now Patent No. 3,466,734, dated Sept. 16, 1969, which is a continuation-in-part of application Ser. No. 582,640, Sept. 28, 1966. Divided and this application Feb. 28, 1969, Ser. No. 823,222
Int. Cl. B23p *3/14, 3/22;* C22c *15/00*
U.S. Cl. 29—196 6 Claims



This application pertains to new and improved metal composite assemblies for pack rolling into composite articles and new and improved powdered-metal compacted articles and to methods for producing articles of these types, and, more particularly, to new and improved methods for producing and maintaining clean metal surfaces and improving bonding during manufacture of the articles.

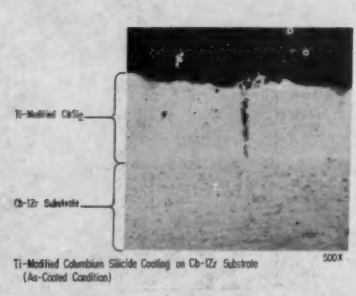
For this purpose the present invention provides as a getter a beta alloy of titanium characterized by a beta micro-structure having substantial thermal stability throughout all heating and deforming operations performed upon the metal assembly with which the getter is used. The alloy is substantially free of other alloying elements that are productive of eutectic compositions with iron having melting points below the maximum temperatures used in the heating of the metal assembly. Specifically, a preferred getter in accordance with the invention is an alloy consisting essentially of about 13% by weight of vanadium, 11% by weight of chromium, 3% by weight of aluminum, and the balance substantially titanium.

3,574,570
COMPOSITE CONTACT STRUCTURE FOR CONNECTION TO AN ALUMINUM SUPPORT
Childress B. Gwyn, Jr., Wethersfield, Conn., assignor to Talon, Inc., Meadville, Pa.
Filed Apr. 29, 1968, Ser. No. 724,779
Int. Cl. B32b 15/00
U.S. Cl. 29—197.5 **3 Claims**



A composite contact structure for connection to an aluminum support where the contact structure has a working face material which is bonded on its rear surface to an aluminum or aluminum-silver alloy body material suitable for connection to an aluminum support by conventional techniques such as brazing, welding, staking, and the like.

3,574,571
COATINGS FOR HIGH-TEMPERATURE ALLOYS
Leonard A. Friedrich, West Hartford, and Emanuel C. Hirakis, Mansfield Center, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 14, 1964, Ser. No. 360,176
Int. Cl. B32p 3/00
U.S. Cl. 29—198 **16 Claims**

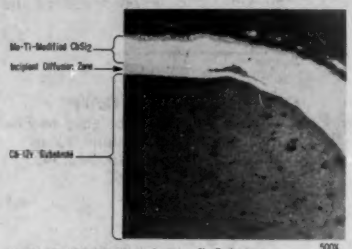


Ti-Modified Columbium Silicide Coating on Cb-12r Substrate (As-Coated Condition)

Columbium and its alloys are provided with titanium-modified columbium silicide coatings which protect the metal from oxidation of high temperatures. The coating is formed by codeposition of titanium and silicon in a pack-cementation process. During exposure to oxidation at high temperature an oxide coat is formed on the outer zone.

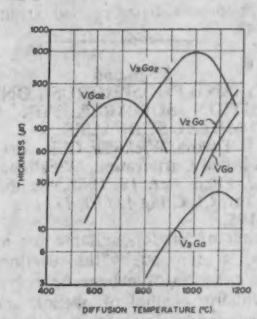
3,574,572
COATINGS FOR HIGH-TEMPERATURE ALLOYS
Leonard A. Friedrich, West Hartford, and Emanuel C. Hirakis, Mansfield Center, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 14, 1964, Ser. No. 360,177
Int. Cl. B23p 3/00
U.S. Cl. 29—198 **17 Claims**

1. An article of manufacture which comprises a core of metal selected from the group consisting of columbium and columbium base alloys, the article having a defect, spalling and thermal and mechanical shock failure resistant surface zone that is oxidation resistant at high temperatures, the surface zone consisting essentially of columbium silicides modified by titanium and molybdenum and characterized by measurable ductility at use temperatures in excess of 1500° F.



Mo-Ti-Modified Columbium Silicide Coating on Cb-12r Substrate (As-Coated Condition)

3,574,573
COMPOSITE SUPERCONDUCTOR WITH LAYERS OF VANADIUM MATERIAL AND GALLIUM MATERIAL
Kyoji Tachikawa, Yoshiaki Tanaka, and Satoshi Fukuda, Tokyo, Japan, assignors to Director of National Research Institute for Metals, Tokyo, Japan
Filed June 19, 1967, Ser. No. 646,820
Claims priority, application Japan, June 25, 1966, 41/41,040
Int. Cl. B32b 15/00
U.S. Cl. 29—198 **6 Claims**



A superconductor consisting of a vanadium substrate of wire or tape form and an overlying layer of superconductive V_3Ga intermetallic compound. A method for manufacturing such superconductor, comprising the steps of forming a layer of intermediate compounds richer in gallium on the surface of a vanadium substrate having said form through a reaction between the vanadium substrate and the surrounding molten gallium at a temperature between 500° C. and 800° C., and of converting said phase to V_3Ga at a temperature between 600° C. and 850° C. An apparatus best suited for practicing said method in the manufacture of such superconductor.

3,574,574
MOTOR FUEL COMPOSITION
Fred W. Moore, Fishkill, and Herbert E. Vermillion, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed June 12, 1968, Ser. No. 738,376
Int. Cl. C10l 1/18
U.S. Cl. 44—66 **16 Claims**

A motor fuel composition which promotes reduced intake valve and port deposits containing from 0.005 to 0.1 volume percent of a polyester of a polymerized carboxylic acid.

3,574,575

LIQUID HYDROCARBON OIL COMPOSITIONS CONTAINING ESTERS OF STYRENE-MALEIC ANHYDRIDE COPOLYMERS AS FLUIDITY IMPROVERS

Paul Y. C. Gee, Woodbury, and Harry J. Andress, Jr., Pitman, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 672,469, Oct. 3, 1967. This application Apr. 21, 1969, Ser. No. 818,127

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 4 Claims

Liquid hydrocarbon oil compositions are provided which contain small amounts, sufficient to improve their fluidity characteristics, of esters of styrene-maleic anhydride copolymers having at least 20 carbon atoms in the alkyl portion. A method for preparing these esters is also provided.

3,574,576

DISTILLATE FUEL COMPOSITIONS HAVING A HYDROCARBON SUBSTITUTED ALKYLENE POLYAMINE

Lewis R. Honnen and Robert Gordon Anderson, Novato, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 408,686, Nov. 3, 1964. This application Sept. 20, 1965, Ser. No. 488,775

The portion of the term of the patent subsequent to Apr. 15, 1986, has been disclaimed

Int. Cl. C10l *1/22*

U.S. Cl. 44—72 9 Claims

Fuel compositions having polypropylene or polyisobutylene substituted polyamines as detergents or dispersants.

3,574,577

METHOD OF PREVENTING ICE FORMATION IN A JET ENGINE

Jerzy J. Bialy, Lagrangeville, and George W. Eckert, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 394,038, Sept. 2, 1964. This application May 22, 1968, Ser. No. 731,331

Int. Cl. C10l *1/22*

U.S. Cl. 44—72 4 Claims

Method of operating a jet engine on a hydrocarbon type jet fuel containing a polyethoxylated propylene diamine to prevent formation of ice crystals in the fuel system.

3,574,578

STEAM HYDROCARBON REFORMING PROCESS

William F. Franz, Gardiner, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1967, Ser. No. 694,184

Int. Cl. C01b *2/14*

U.S. Cl. 48—214 9 Claims

A low temperature method for the steam reforming of hydrocarbons using a zeolite containing catalyst to produce a gas containing hydrogen and carbon dioxide and substantially free from carbon monoxide.

3,574,579

BRONZE-IRON METAL-BONDED DIAMOND ABRASIVE ARTICLES CONTAINING BORON NITRIDE PARTICLES

Howard S. Clarke, Deane, Bolton, England, assignor to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed May 5, 1969, Ser. No. 822,027

Claims priority, application Great Britain, May 24, 1968, 24,888/68

Int. Cl. B24d *3/02*; C04b *31/16*

U.S. Cl. 51—307 6 Claims

Metal-bonded diamond grinding wheels are improved by the inclusion of from about 15% to about 60% by volume of granular boron nitride, having a particle size ranging from about 63 to about 1000 microns, in the abrasive section of the wheel. The inclusion of the boron nitride reduces the temperature generated when the wheel is used without a liquid coolant, and improves the grinding ratio (weight of material removed per weight of wheel worn). The invention makes possible the general use of metal-bonded diamond abrasive wheels under dry grinding conditions, i.e., without a liquid coolant.

3,574,580

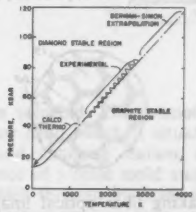
PROCESS FOR PRODUCING SINTERED DIAMOND COMPACT AND PRODUCTS

Harold D. Stromberg, Oakland, and Douglas R. Stephens, Castro Valley, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 8, 1968, Ser. No. 774,274

Int. Cl. B24d *3/02*

U.S. Cl. 51—307 7 Claims



Process including preliminary cleansing and essential preconditioning treatment of finely divided diamond particles followed by compaction of the preconditioned particles at high temperatures and pressures in the diamond stable region to produce dense self-bonded sintered diamond compact. Incorporation of boron, silicon or beryllium as sintering aid agents with the preconditioned particles still further promotes sintering and bonding of the compact.

3,574,581

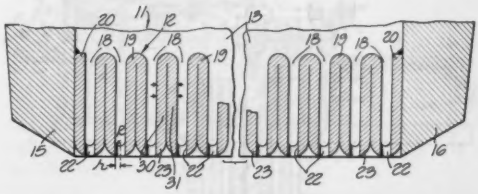
BUSHING FOR USE IN EXTRUDING FIBERS

Edward T. Strickland and Homer C. Amos, Palm Springs, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 13, 1968, Ser. No. 759,736

Int. Cl. C03b *37/02*

U.S. Cl. 65—1 16 Claims



A bushing for use in extruding fibers under pressure from high temperature meltable material, such as molten glass. The bushing includes a plurality of tiny and closely spaced orifices through which the material is extruded. There are described herein various geometrical configurations for bushings which permit the use of a thin wall at the orifice area which can be subjected to high internal pressure with relatively low stress on the wall. The wall of the bushing at the orifice area preferably has a thickness less than several times the diameter of an orifice. One configuration is in the form of a folded or pleated

ribbon of thin metal, the ribbon providing one or more apexes each having one or more orifices through which the material is extruded. Another configuration provides a circular wall in the form of a section of a toroid at the orifice area, and another provides plural dimple-like orifice areas substantially in the form of sections of spheres. For glass fiber extrusion, the bushing typically is made from a thin sheet of high temperature resistant material, such as platinum, platinum alloys, or other suitable metals or alloys.

3,574,582

METHOD FOR MAKING FIBER OPTICAL IMAGE-CONDUCTING DEVICES EMBODYING STRAY LIGHT-ABSORBING MEANS

Walter P. Siegmund, Woodstock, Conn., and Noble S. Williams, Sturbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Original application May 17, 1965, Ser. No. 456,249, now Patent No. 3,436,142, dated Apr. 1, 1969. Divided and this application Oct. 4, 1968, Ser. No. 765,234

Int. Cl. C03b *37/00, 11/08, 19/00*

U.S. Cl. 65—4 **2 Claims**

Method of making fiber optical image-conducting devices each of different thicknesses in different parts considered in the longitudinal direction thereof, and including thin elongated light-absorbing means dispersed and uniformly spaced throughout the cross-sectional area of the fiber optical device and extending longitudinally from end-to-end thereof, said method being such as to form absorbing means of such varying controlled stray light characteristics as to provide uniform transmission of optical energy through all parts of the image-conducting device formed thereby.

3,574,583

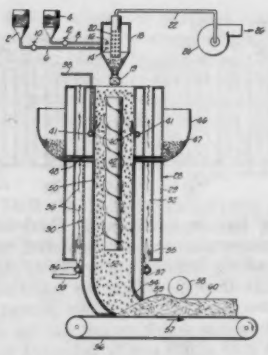
PROCESS FOR PREPARING FOAM GLASS INSULATION

Aaron Goldsmith, Sepulveda, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 29, 1968, Ser. No. 701,203

Int. Cl. C03b *19/08*

U.S. Cl. 65—22 **14 Claims**



A process for preparing foamed glass comprising heating under pressure a glass or glasses in admixture with a vaporizable metal or a vaporizable salt, said heating being conducted to a temperature at which the mixture of glass and metal or glass and salt has a viscosity of about 10^3 to 10^5 poises and the metal or salt exerts a vapor pressure of about 5 to about 50 p.s.i. in excess of atmospheric pressure, releasing the pressure on the glass mixture such that the metal or salt vaporizes to form a foamed glass, and cooling the foamed glass. Preferably, the heating is carried out in a vertical furnace with the pressure supplied by the weight of the glass mixture contained in the furnace, the raw materials being charged to the top of the furnace and the molten mixture of glass and metal or glass and salt being withdrawn at the bottom of the furnace. If a salt is employed, it is one which is relatively unreactive with the glass and is at least partially soluble in the glass to lower its viscosity at the heating temperature employed in the process.

3,574,584

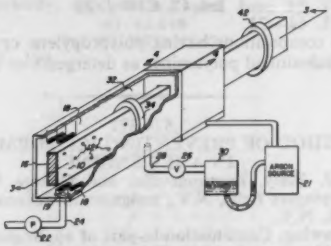
METHOD OF FABRICATING GLASS COATED METAL SUBSTRATES

Roland T. Girard, Scotia, and Matthew J. Curran, Schenectady, N.Y., assignors to General Electric Company

Filed May 15, 1969, Ser. No. 824,948

Int. Cl. C03c *29/00, 7/00*

U.S. Cl. 65—59 **12 Claims**



Pinhole free, glass coated iron substrates suitable for utilization as radio chassis are formed by heating the iron substrate above 500° C. in a controlled atmosphere to limit oxidation of the iron substrate surface to less than approximately 30,000 A., immersing the surface oxidized substrate in a fluidized bed of glass particles, e.g. vitreous enamel frit ground to a narrow particle size range, to fuse the particles to the substrate surface and subsequently firing the coated substrate outside the fluidized bed at a temperature above 500° C. to mature the glass coating. Desirably the final firing employs heat generated within the substrate, e.g. by induction or resistance heating of the substrate, to bake the glass outwardly from the substrate-glass interface thereby maximizing the density of the glass coating.

3,574,585

ELECTRIC GLASS MELTING FURNACE AND METHOD OF MELTING GLASS

Leon F. Robertson and James W. Thomas, Brockport, Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

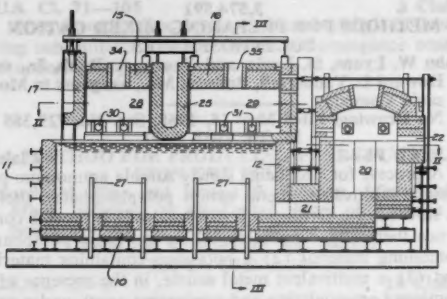
Filed Aug. 19, 1968, Ser. No. 753,360

Int. Cl. C03b *5/02*

U.S. Cl. 65—135 **10 Claims**

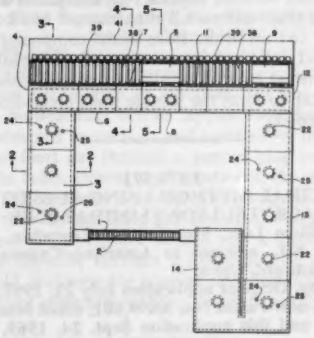
A continuous tank furnace having a batch feeding and an opposite glass discharge end with submerged electrodes for supplying heat to melt the batch constituents. The space above the level of the melt in the tank is divided into at least two successive zones by a hanging transverse refractory wall which extends downwardly close to the

surface of the melt. Independently controlled auxiliary heaters above the surfaces of the melt in the two zones provide means for controlling the existence of and the density or thickness of the batch cover on the glass melt. This maintains a substantial batch cover in the first zone to



retain heat within the melt while auxiliary heat above the melt in the second zone minimizes the blanketing or insulating effect of the batch cover and thus promotes liberation of gases which would otherwise form undesirable seeds and/or blisters in the molten glass.

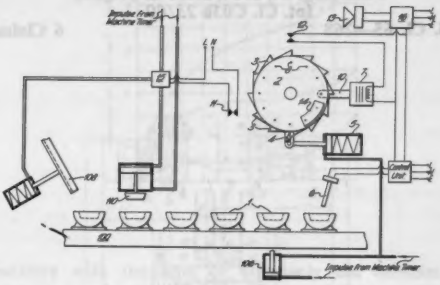
3,574,586
GLASS SEALING APPARATUS
Edward Ernest Johnson, North Wales, Pa., assignor to Selas Corporation of America, Dresher, Pa.
Filed Dec. 18, 1968, Ser. No. 784,562
Int. Cl. C03b *23/20*
U.S. Cl. 65—152 **5 Claims**



The present invention is directed to apparatus for sealing the edges of all glass glazing units. Pairs of glass sheets are carried in sequence and automatically through a preheat tunnel, a sealing tunnel, an annealing tunnel, and a cooling tunnel.

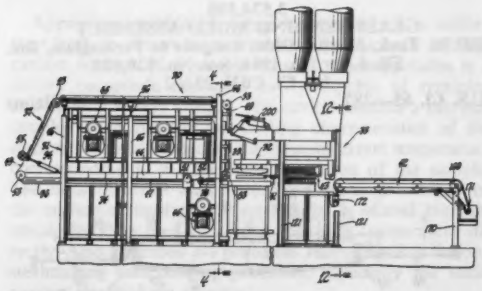
3,574,587
GLASS FORMING MACHINE
Cyril Grundy, St. Helens, and John Bradley Stow, Ormskirk, England, assignors to Ravenhead Glass Limited, St. Helens, England
Filed Nov. 12, 1968, Ser. No. 775,020
Claims priority, application Great Britain, Nov. 15, 1967, 52,001/67
Int. Cl. G08b *21/00*; C03b *9/00, 11/02*
U.S. Cl. 65—158 **10 Claims**

A machine for forming hollow glass articles which comprises a rotating turret carrying a plurality of molds, a charging chute for filling the molds with molten glass, a plunger or blowpipe for forming the charge into a shape, and a push rod for ejecting the formed glass from the molds. A control unit is indexable intermittently into a plurality of positions equal to the number of molds. The unit comprises a plurality of pins which are mounted in a ratchet wheel. Each pin corresponds to a specific mold and is moved into operative position by contact with a



lever attached to a solenoid. The solenoid is coupled to an infrared detector head which is situated between the removal station and charging station, and which determines the presence of a filled mold and passes a signal to the solenoid, which through the lever actuates the pin. The pin in its operative position then contacts a switch which causes either the mold charger or article former not to operate in conjunction with the filled mold.

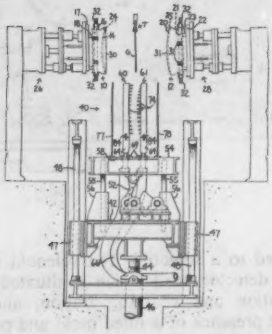
3,574,588
ASSEMBLY FOR CONVEYING GLASS SHEETS THROUGH A HEAT TREATING FURNACE
Norman C. Nitschke, Perrysburg, Ohio, assignor to Permaglass, Inc., Millbury, Ohio
Filed Dec. 22, 1967, Ser. No. 692,807
Int. Cl. C03b *25/00*
U.S. Cl. 65—182 **10 Claims**



A conveying assembly especially adapted for moving a sheet of glass over an elongated gas support bed in a furnace as the sheet of glass is heated. The furnace has a pair of elongated openings along each side thereof which are coextensive with the gas support bed. The conveying means includes a plurality of pusher bars spaced from one another and extending across the bed with their ends extending through the openings and exteriorly of the furnace. There is an endless loop chain disposed exteriorly of and along each side of the furnace. The chains

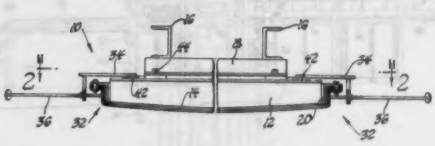
are operatively connected to opposite ends of the pusher bars for moving the latter along the bed. The chains are therefore in the cooler environment exteriorly of the furnace.

3,574,589
BENDING AND TEMPERING GLASS SHEETS
George E. Yockey, Crestline, Ohio, assignor to PPG Industries, Inc.
Filed Aug. 24, 1966, Ser. No. 574,636
Int. Cl. C03b 23/00
U.S. Cl. 65—268 6 Claims



Apparatus for bending and tempering glass sheets comprising a pair of relatively massive glass shaping members having complementary shaping surfaces movable between a glass engaging position and a retracted position, a pair of relatively light glass quenching means movable between a retracted position offset from said glass shaping members and a glass quenching position intermediate said glass shaping members when the latter are retracted. The lightness of the quenching means facilitates its movement and, if desired, its reciprocation, while applying chilling fluid against the surfaces of a newly press bent glass sheet.

3,574,590
GLASS BENDING MOLD ASSEMBLY
Bill W. Tank, Martin, Ohio, assignor to Permaglass, Inc.
Filed Apr. 10, 1968, Ser. No. 720,028
Int. Cl. C03b 23/02
U.S. Cl. 65—287 3 Claims



A glass treating assembly of the type including means for heating a sheet of glass, a press mold having a glass pressing surface for curving the sheet. The improvement comprises a frame with insulating material attached to the frame and an attachment means removably supporting the frame adjacent the mold so that the insulating material covers the pressing surface of the mold with the attachment means being operable for allowing the frame to be removed from the mold, whereby the insulating material may be replaced when the frame is at a position remote from the heat of the assembly. Another feature is the utilization of a plurality of layers of fiberglass cloth as the insulating material.

3,574,591
METHODS FOR PREPARING MIXED CATION POLYPHOSPHATES
John W. Lyons, St. Louis, and George A. Rauh, Jr., and Howard L. Vandersall, Ballwin, Mo., assignors to Monsanto Company
No Drawing. Filed May 15, 1968, Ser. No. 729,385
Int. Cl. C05b 1/00
U.S. Cl. 71—1 9 Claims

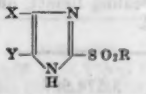
A process for producing slowly soluble ammonium-potassium-multivalent metal cation polyphosphates, useful as slow release fertilizers is disclosed which process comprises thermally condensing (1) an inorganic phosphate-containing material (2) a potassium-containing material and (3) a multivalent metal source, in the presence of a combined ammoniating and condensing agent, under controlled temperature conditions to thereby produce the mixed cation polyphosphates containing specified ratios of the nitrogen and potassium and specified quantities of multivalent cations.

3,574,592
PROCESS FOR PREPARING MICRONUTRIENTS AND PRODUCTS PRODUCED THEREBY
Harold A. Hartung, West Collingswood, N.J., assignor to MacAndrews & Forbes Company, Camden, N.J.
No Drawing. Filed June 20, 1969, Ser. No. 835,254
Int. Cl. C05f 11/00
U.S. Cl. 71—1 36 Claims

Trace metal micronutrients, in the form of a soluble complex of the trace metal in the acid soluble portion of an aqueous alkaline licorice root extract, are produced by reacting the aqueous alkaline extract of licorice root with either (a) an acidic trace metal compound or (b) a mineral acid followed by reaction of the resulting acid soluble material with an alkaline or neutral compound of a trace metal, to form the soluble trace metal-licorice root extract complex.

3,574,593
HERBICIDAL METHOD USING SUBSTITUTED ALKYLSULFONYLIMIDAZOLES
Albert William Lutz, Montgomery Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application July 21, 1967, Ser. No. 654,968, now Patent No. 3,499,001, dated Mar. 3, 1970. Divided and this application Sept. 24, 1969, Ser. No. 870,910
Int. Cl. A01n 9/22
U.S. Cl. 71—92 5 Claims

Substituted alkylsulfonylimidazole compounds of the formula:



wherein R is a member selected from the group consisting of lower alkyl, alkenyl and aralkyl and X and Y are hydrogen, nitro, or halogen, at least one of X and Y being halogen. The compounds where one of X and Y is hydrogen or nitro are formed from the corresponding 2-alkylthioimidazole intermediates by oxidation of the intermediates with m-chloroperbenzoic acid or monoperphthalic acid, followed by halogenation. The compounds are highly active pre-emergence and post-emergence herbicides.

3,574,594
PHENYLACETONITRILES AS PRE-EMERGENCE HERBICIDES

Stanley T. D. Gough, Raritan, and Roger P. Napier, Piscataway, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Apr. 29, 1968, Ser. No. 725,173
Int. Cl. A01n *9/20;* **C07c** *121/68*
U.S. Cl. 71—105 **3 Claims**

Phenylacetonitriles having trifluoromethyl or cyano ring substitutents are effective in pre-emergence control of undesirable grasses.

3,574,595
METHOD FOR PRODUCING PREREDUCED IRON ORE PELLETS

Morris M. Fine and Robert B. Schluter, Minneapolis, Minn., assignors to the United States of America as represented by the Secretary of the Interior

Filed Jan. 6, 1969, Ser. No. 789,222
Int. Cl. C21b *1/10*
U.S. Cl. 75—5 **10 Claims**

Green pellets composed of (1) finely ground iron ore or concentrate and (2) a binder such as bentonite clay are heated to a temperature of about 1740° F.–2100° F., preferably 1830° F., under strongly reducing conditions, in the presence of a reductant and sulfur, so that the pellets are partially reduced and sulfurized to the extent that they contain at least bout 0.08 weight percent sulfur. Substantial sintering of metallic iron in the pellets thereby occurs. Subsequently, these hot prereduced pellets can be desulfurized with $CaCO_3$.

3,574,596
METHOD FOR PRODUCING STAINLESS STEEL

Gordon R. Lohman, Glen Ellyn, and Richard Kurt Matuschkovitz, Chicago, Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Sept. 15, 1967, Ser. No. 667,978
Int. Cl. C21c *7/00*
U.S. Cl. 75—49 **4 Claims**

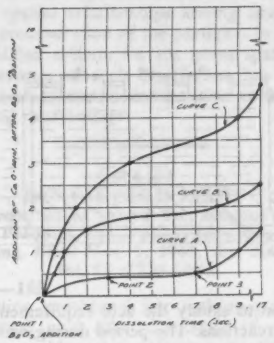
In the production of stainless steels involving additions of titanium, columbium or tantalum, the slag is removed from the molten steel before tapping into the ladle. The melt is subjected to vacuum and agitated by the introduction of an inert gas through a porous plug near the bottom of the ladle. During such treatment, the titanium, columbium or tantalum is added under vacuum and mixed with the melt by the inert gas agitation. Following treatment, the melt is pressure poured into a mold by disposing a pouring tube between a lower portion of the melt and a mold, inclosing the pouring tube and ladle in a tank, and applying superatmospheric pressure within the tank.

3,574,597
ACCELERATION OF THE DISSOLUTION OF LIME IN THE BASIC OXYGEN FURNACE PROCESS

Clifford J. Lewis and Richard S. Bruski, Lakewood, Colo., assignors to The Flintkote Company, White Plains, N.Y.

Continuation-in-part of application Ser. No. 611,277, Jan. 24, 1967. This application Aug. 20, 1969, Ser. No. 859,237
Int. Cl. C21c *7/00*
U.S. Cl. 75—53 **22 Claims**

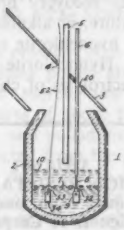
The rate of dissolution of lime in the slag of a basic oxygen steelmaking furnace is accelerated, and slag control is enhanced, by charging lime to the slag in the presence of a boron-containing compound, particularly one that yields an oxide of boron, especially B_2O_3, under the operating conditions prevailing in the basic oxygen furnace. Illustrative of such boron-containing compounds used as additives with the lime are boron trioxide, boric acid, anhydrous sodium tetraborate, calcium metaborate, calcined and uncalcined colemanite and rasorite. The additive preferably is delivered to the slag either in intimate mixture with the lime or separately but substantially simultaneously with the lime.



3,574,598
METHOD FOR CONTROLLING BASIC OXYGEN STEELMAKING

David W. Kern, Slatedale, and Philip D. Stelts, Center Valley, Pa., assignors to Bethlehem Steel Corporation

Filed Aug. 18, 1967, Ser. No. 661,616
Int. Cl. C21c *5/32;* **G01k** *5/32*
U.S. Cl. 75—60 **6 Claims**



Apparatus capable of being immersed into a molten steel bath to obtain the temperature of the bath and the carbon content of a sample thereof. The apparatus is a hollow receptacle having a cavity capable of retaining and cooling a steel sample. The cavity contains a thermocouple which records the cooling characteristics of the steel sample and especially the liquidus arrest temperature corresponding to a phase transformation of the sample. The liquidus arrest temperature is used as a measure of the carbon content of the steel bath. A second thermocouple may be used to record the bath temperature directly. Also described are processes for controlling various steelmaking and refining processes, especially the basic oxygen steelmaking process.

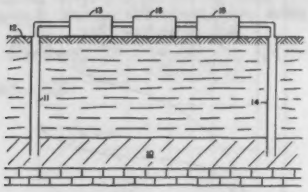
3,574,599
MINERAL RECOVERY

Gerald D. Ortloff and Claude E. Cooke, Jr., Houston, and Donald K. Atwood, Bellaire, Tex., assignors to Esso Production Research Company

Filed June 25, 1968, Ser. No. 739,702
Int. Cl. C22b *3/00, 3/02*
U.S. Cl. 75—104 **11 Claims**

A method for the situ recovery of copper values from copper ores. In the process of this invention, the subterranean formation containing the copper ore is penetrated

by a well extending from the earth surface to the deposit. A strong leach solution having a high ferric iron content is injected by way of the well into the copper ore deposit. Sufficient mineral acid is included in the



leach solution to satisfy the acid requirements of unproductive side reactions. The period during which the leach solution remains in the ore body is regulated to approach the optimum residence time.

3,574,600

PROCESS FOR RECOVERY OF GOLD FROM CARBONACEOUS ORES

Bernard J. Scheiner, Sparks, and Roald E. Lindstrom and Thomas A. Henrie, Reno, Nev., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed May 15, 1968, Ser. No. 729,382
Int. Cl. C22b *11/08*
U.S. Cl. 75—105 **3 Claims**

Carbonaceous gold ores are rendered amenable to a conventional cyanide recovery process by pretreatment with acid-ozone mixture, or alkaline sodium hypochlorite or alkaline calcium hypochlorite compounds at temperatures under 70° C. Hypochlorite solutions can be generated in situ by electrolysis of chloride solutions.

3,574,601

CORROSION RESISTANT ALLOY

Lewis P. Myers, Mount Penn, and Kermit J. Goda, Jr., Leesport, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,609
Int. Cl. C22c *39/20*
U.S. Cl. 75—125 **4 Claims**

An essentially martensitic Cr—Ni—Mo[W]—Cu stainless steel which has good corrosion resistance in acid media and high strength.

3,574,602

HIGH TENSION TOUGH STEEL HAVING EXCELLENT PROPERTY RESISTING TO DELAYED RUPTURE

Hisashi Gondo, Isao Kimura, Tuneyasu Watanabe, and Mitsuo Honda, Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 15, 1967, Ser. No. 690,783
Int. Cl. C22c *39/54*
U.S. Cl. 75—126 **4 Claims**

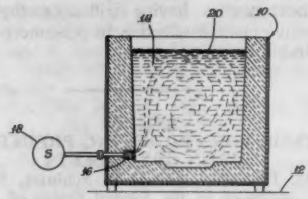
This invention relates to a high tension tough steel having excellent property resisting to delayed rupture, consisting of 0.05 to 0.80% C, 0.05 to 2.00% Si, 0.30 to 2.00% Mn, 0.05 to 6.00% Cr 0.01 to 0.30% Tr, 0.005 to 0.30% Zr, 0.5 to 0.008% B as basis elements at least one element selected from the group consisting of Sn, Sb and As, from the group consisting of Nb+Ta, W, Hf and Pd and further from the group consisting of Mo, Ni, V and Cu, balance being Fe and impurities

3,574,603

METHOD FOR PRODUCING STAINLESS STEEL

John A. Rassenfoss, Park Ridge, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sept. 15, 1967, Ser. No. 667,977
Int. Cl. C21c *7/00*; C22c *33/00*
U.S. Cl. 75—129 **5 Claims**



In the production of stainless steels involving additions of titanium, columbium or tantalum, the molten steel is agitated in the ladle by the introduction of an inert gas from a lower portion of the side of the ladle, while maintaining a layer of slag on the melt. The melt is cast into a slab or other suitable form by pressure pouring, which involves disposing the ladle in an enclosure with a pouring tube between a mold and a lower portion of the melt, and applying superatmospheric pressure within the enclosure. Preferably, an inert gas atmosphere is maintained in the casting cavity of the mold during the pouring operation.

3,574,604

NICKEL-CHROMIUM ALLOYS RESISTANT TO STRESS-CORROSION CRACKING

Harry R. Copson, Mahwah, and Daniel van Rooyen, Ramsey, N.J., assignors to The International Nickel Company Inc., New York, N.Y.

No Drawing. Filed May 26, 1965, Ser. No. 459,110
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **4 Claims**

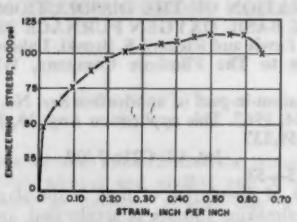
Intergranular stress-corrosion attack of metal articles in contact with aerated high purity water at elevated temperature is minimized when such articles are formed from nickel-chromium and nickel-chromium-iron alloys of high chromium content.

3,574,605

WELDABLE, NONMAGNETIC AUSTENITIC MANGANESE STEEL

Albert M. Hall, 2342 Dorset Road 43221; Donald B. Roach, 3864 Mountainview Road 43221; and Dimon A. Roberts, 1710 King Ave. 43212, all of Columbus, Ohio; and Frank A. Pimentel, 1653 98th St., Niagara Falls, N.Y. 14204

Filed June 24, 1968, Ser. No. 739,305
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 **3 Claims**



A weldable, nonmagnetic austenitic manganese steel of the Hadfield type and compatible weld metal which will remain nonmagnetic and tough as welded and without the requirement of post-weld heat treatment comprising .3% carbon, 13% manganese, 5% nickel, 3 to 5% chromium, 1% molybdenum and .5% vanadium.

3,574,606
METHOD FOR ADDING TELLURIUM DIOXIDE TO MOLTEN STEEL

William Edgar, Glenwood, Ill., and Ralph E. Pray, Pasadena, Calif., assignors to Inland Steel Company, Chicago, Ill.

No Drawing. Filed July 3, 1968, Ser. No. 742,167
Int. Cl. C22c *33/02, 39/54*
U.S. Cl. 75—129 5 Claims

Adding tellurium to molten steel using briquet containing compacted tellurium dioxide powder and steel machine shop turnings.

3,574,607
ALUMINUM-COPPER-MERCURY COMPLEX AND METHODS FOR PRODUCING THE SAME

George G. Merkl, 517 Boulevard, New Milford, N.J. 07646

No Drawing. Continuation-in-part of abandoned application Ser. No. 672,438, Oct. 3, 1967. This application Apr. 17, 1969, Ser. No. 828,057
Int. Cl. C22c *7/00*
U.S. Cl. 75—134 27 Claims

A stable, electrically conductive, chemically bonded complex of aluminum-mercury and copper alone or in combination with any one or more of tin, cadmium, zinc, iron, silver and lead and methods for producing the same. This is a continuation-in-part of U.S. patent application Ser. No. 672,438, filed Oct. 3, 1967, now abandoned.

3,574,608
BERYLLIUM-ANTIMONY COMPOSITION

Albert James Stonehouse, Lyndhurst, Ohio, assignor to The Brush Beryllium Company, Cleveland, Ohio

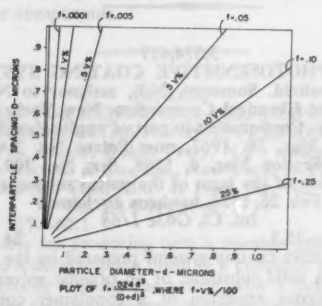
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,864
Int. Cl. C22c *25/00, 31/00*
U.S. Cl. 75—149 10 Claims

There is provided a composition of beryllium and antimony containing from 0.1% to 16% by weight of antimony and characterized by improved machining characteristics over those obtained with beryllium. There is also provided a new compound of antimony and beryllium, Sb_3Be_2.

3,574,609
PROCESS FOR DISPERSOID STRENGTHENING OF COPPER BY FUSION METALLURGY AND PRODUCTS THEREOF

Walter L. Finlay, New York, N.Y., and Donald A. Hay, Medfield, Mass., assignors to Copper Range Company, New York, N.Y.

Filed June 9, 1967, Ser. No. 644,954
Int. Cl. C22c *9/00, 1/02*
U.S. Cl. 75—153 26 Claims



In the production of dispersoid strengthened copper by fusion metallurgy, for a particular copper matrix-dispersoid particle system characterized by particular spatial and wetting relationships, requirements for stable and uniform equilibrium are indicated when the system is molten and when the system is solidifying and solidified. In the molten system, for the given wetting relationships, establishment of such equilibrium has been found to be a function of spatial relationships among size, separation and volume concentration of the particles. In the solidifying and solidified system, for the given spatial relationships, maintenance of such equilibrium has been found to be a function of system composition as determinative of the wetting relationships.

3,574,610
DENTAL GOLD ALLOY

Emil M. Prosen, Bala-Cynwyd, Pa., assignor to Nobilium Products, Inc., Philadelphia, Pa.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,794
Int. Cl. C22c *5/00*
U.S. Cl. 75—165 6 Claims

The invention provides a low melting point precious metal or dental gold alloy consisting of gold, nickel and gallium or gold, nickel, gallium and palladium. The yellow gold alloy which consists only of gold, gallium and nickel has a melting point of about 1400° F. and can be cast directly to prefabricated porcelain teeth. Also, it has a high Brinell hardness and high tensile strength. The white or platinum colored dental gold alloy, which consists of gold, gallium, nickel and palladium, has a melting point of approximately 1500° F., high Brinell hardness, and high tensile strength. Both alloys are tarnish resistant.

3,574,611
HIGH TEMPERATURE DENTAL GOLD ALLOY

Emil M. Prosen, Bala-Cynwyd, Pa., assignor to Nobilium Products, Inc., Philadelphia, Pa.

No Drawing. Filed Nov. 18, 1968, Ser. No. 776,785
Int. Cl. C22c *5/00*
U.S. Cl. 75—165 7 Claims

The present invention provides high temperature dental gold alloys having melting points above 2000° F. and adapted to have fused thereto low fusing porcelains having fusing temperatures of about 1800° F. The alloys consist of gold, gallium and palladium, and one or more additional elements selected from the group consisting of nickel, silver, platinum and iridium. During casting the gallium forms an oxide on the surface of the alloy which promotes bonding of the fused porcelain thereto without discoloring the porcelain.

3,574,612
NICKEL-CHROMIUM ALLOY

Roy F. Maness, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Feb. 3, 1969, Ser. No. 796,176
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 2 Claims

A nickel alloy containing 30 to 35 weight percent chromium and 3.5 to 3.9 weight percent silicon with small amounts of carbon, titanium and manganese is highly corrosion resistant to hot, liquid and vapor phase nitric acid solutions, containing iron (III), chromium (VI) and fluoride ions.

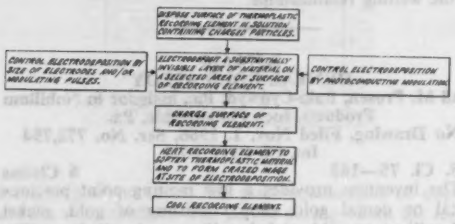
3,574,613
METHOD OF ELECTROSTATIC RECORDING ON A THERMOPLASTIC RECORDING ELEMENT

Frederick H. Nicoll, Princeton, N.J., assignor to RCA Corporation

Filed May 31, 1968, Ser. No. 733,496
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.1 5 Claims

A method of recording information on a thermoplastic recording element comprises (1) disposing the thermo-

plastic surface of the recording element in a solution of charged particles, and (2) electrodepositing, as by electroplating or electrophoresis, the particles from the solution onto only a selected area of the surface, representative of the information, in a quantity corresponding to an average thickness of at least 2×10^{-4} monolayer of deposited particles, but substantially invisible to the naked eye. The

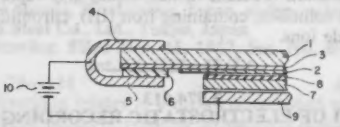

DISPOSE SURFACE OF THERMOPLASTIC RECORDING ELEMENT IN SOLUTION CONTAINING CHARGED PARTICLES.
CONTROL ELECTRODEPOSITION BY SIZE OF ELECTRODES AND/OR MODULATING FIELDS.
ELECTRODEPOSIT A SUBSTANTIALLY INVISIBLE LAYER OF MATERIAL ON A SELECTED AREA OF SURFACE OF RECORDING ELEMENT.
CONTROL ELECTRODEPOSITION BY PHOTOCONDUCTIVE MODULATION.
CHARGE SURFACE OF RECORDING ELEMENT.
HEAT RECORDING ELEMENT TO SOFTEN THERMOPLASTIC MATERIAL AND TO FORM CRAZED IMAGE AT SITE OF ELECTRODEPOSITION.
COOL RECORDING ELEMENT.

recording element with the electrodeposited information thereon may be stored as long as desired, and the information can be made visible, when desired, by (3) charging the surface with a uniform electrostatic charge, and (4) heating the recording element to a temperature at which the thermoplastic material deforms and provides a visible crazed image of the information.

3,574,614
PROCESS OF PREPARING MULTIPLE COPIES FROM A XEROPRINTING MASTER
Leonard M. Carreira, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Jan. 6, 1967, Ser. No. 607,747
Int. Cl. G03g *13/16, 13/22;* **B41m** *1/06*
U.S. Cl. 96—1.4 **2 Claims**

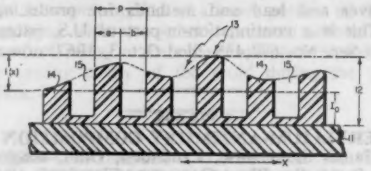
This application relates to a method of preparing a novel xeroprinting master utilizing electrophoretic principles. Upon introducing an insulating material into a photoelectrophoretic imaging suspension it has been determined that the areas from which the photosensitive particles migrate become insulating and capable of supporting an electrostatic charge in an imagewise pattern.

3,574,615
MECHANISM FOR ELECTRICALLY CONTACTING A THIN LAYER AND USE THEREFOR
Theodore H. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 4, 1968, Ser. No. 718,802
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **1 Claim**



Electrical contact with a thin conductive layer is obtained using a compliant sheet of intermediate conductivity urged by a metallic conductive clamp into intimate face-to-face contact with a surface of the thin conductive layer. This structure is especially useful in electrophotographic processes in which the thin conductive layer is transparent and serves as one of the two electrodes in field-induced, imagewise charge transfer.

3,574,616
MODULATED IMAGE PHOTOGRAPHY
Peter F. Mueller, Concord, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.
Filed June 9, 1967, Ser. No. 645,042
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 **14 Claims**



An optical system is described for constructing an image of a scene from a phase record of the scene modulated with a spatially-distributed periodic carrier in which a diffraction pattern is erected in Fourier transform space, and spatially filtered to construct the image. A phase record comprised of several images overlapping as "multiple exposures" in the same storage medium, each modulated with a periodic carrier extending throughout the image but having a characteristic by which at least one of its diffraction orders convolved with a spectrum of the image is spatially separable from diffraction orders of the other periodic carrier modulations in transform space is described. The several images can represent different scenes; or they can be registered images of a single colored scene, in which case their respective carriers represent spectral zones.

3,574,617
NOVEL PHOTOSENSITIVE COATING SYSTEMS
Martin Skoultchi, Somerset, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 626,945, Mar. 30, 1967, now Patent No. 3,429,852. This application Mar. 4, 1968, Ser. No. 709,969
The portion of the term of the patent subsequent to Feb. 25, 1986, has been disclaimed
Int. Cl. G03c *1/68*
U.S. Cl. 96—35.1 **24 Claims**

Photosensitive coating systems prepared by the deposition, upon a solid substrate, of an organic solvent solution or aqueous emulsion of a copolymer containing moieties derived from a particular class of ethylenically unsaturated benzophenone derivatives; the presence of said moieties rendering the resulting polymer coating sensitive to ultra-violet or visible light which affects the crosslinking, or insolubilization, of the thus exposed coat-

ings. The latter photosensitive coating systems are particularly suitable for use in various applications such, for example, as in the lithographic and chemical milling fields.

3,574,618
PHOTOGRAPHIC PROCESS AND APPARATUS
Alvin Cronig, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Sept. 3, 1968, Ser. No. 756,797
Int. Cl. G03c *5/24, 5/38*
U.S. Cl. 96—48 20 Claims

Improved photographic gel processes, apparatus, and compositions wherein the photographic materials are carried in a gel composition. The gel composition preferably comprises the reaction product of a solution of image forming materials and a gel former. Preferably the gel composition structure is heat-reversible and flexible. In a preferred method of this invention, a photosensitive copy medium is exposed and contacted with a gel composition comprising a reaction product of a solution of image forming materials and a gel former. The gel composition is allowed to remain in contact with photosensitive material for a sufficient time to process the exposed photosensitive material. The gel composition is cooled during the processing in order to form a layer which is strippable from the photosensitive material. In one embodiment of this invention, the gel composition is in the liquid or viscous state when it is contacted with the photosenistive layer. The gel composition also may be in the form of a tape, gel roller, or the like when it is brought into contact with the photosensitive layer. Another preferred embodiment of this invention is where the gel composition is heat reversible and therefore, can be heated after use to convert to a liquid or viscous state and can then be reused in the system which requires a liquid or viscous gel composition for the starting material. A gel composition comprising a solution of metal ions or physical developer is an especially preferred system.

3,574,619
CONCENTRATED LIQUID COLOR DEVELOPERS CONTAINING BENZYL ALCOHOL
John Joseph Surash, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 10, 1968, Ser. No. 720,380
Int. Cl. G03c *3/00, 5/30*
U.S. Cl. 96—55 11 Claims

Concentrated acidic solutions containing benzyl alcohol and water are prepared using simple liquid glycols, e.g., ethylene glycol. Such concentrates render feasible the packaging of photographic color developing agents together with benzyl alcohol in concentrated liquid color developer components.

3,574,620
PROCESS FOR RENDERING CELLULOSIC-POLYESTER SUBSTRATES STAIN RESISTANT
Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
No Drawing. Filed Mar. 4, 1968, Ser. No. 709,954
Int. Cl. B44d *1/44, 1/14*
U.S. Cl. 117—62.1 2 Claims

A process for producing both a durable stain-releasing finish and a durable-press finish in a cellulosic textile article comprising treating the article with a polymer containing free carboxyl groups, contacting the treated article with neutral metallic salt to convert substantially all of the free carboxyl groups to the corresponding metal salt, and treating the article with a textile-modifying resin precursor and acid catalyst and heating until a stain-releasing and durable-press finish is obtained.

3,574,621
PROCESS FOR THE DEVELOPMENT OF PHOTOGRAPHIC SILVER IMAGES IN ACID MEDIUM 1,4-DIAZINE
Heinrich Schaller, Fribourg, Matthias Schellenberg, Marly-le-Grand, and Ernst Schumacher, Fribourg, Switzerland, Rolf Steiger, Berkeley, Calif., and Reinhard Steinmetz, Ludwigshafen Naudach, Germany, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed Apr. 4, 1968, Ser. No. 718,927
Claims priority, application Switzerland, Apr. 20, 1967, 5,655/67
Int. Cl. G03c *5/30*
U.S. Cl. 96—66 10 Claims

This invention is based on the completely surprising observation that a large class of organic compounds is excellently suitable for the development of photographic silver images in an acid medium. The subject of this invention is accordingly a process for the development of photographic silver images from silver salts in which the silver is liberated from the silver salts in an acid medium in the presence of reduction products of 1,4-diazine compounds which have at most been reduced to the dihydro stage.

3,574,622
PHOTOPOLYMERIZATION USING N-ALKOXY HETEROCYCLIC INITIATORS
Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Oct. 9, 1968, Ser. No. 766,304
Int. Cl. G03c *1/70;* C09b *23/10, 23/06*
U.S. Cl. 96—67 42 Claims

Energy-sensitive compounds containing a heterocyclic nitrogen atom substituted with an —OR group where R is an alkyl, aryl, or acyl radical, are photochemical initiators for the polymerization of vinyl monomers.

3,574,623
SPECTRALLY SENSITIZED SILVER DYE-BLEACH PHOTOGRAPHIC ELEMENTS
Carl James Williams, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Aug. 19, 1965, Ser. No. 481,064
Int. Cl. G03c *1/76, 1/10*
U.S. Cl. 96—73 12 Claims

Photographic elements useful in the silver dye bleach process and containing a bleachable dye in association with a silver halide emulsion are efficiently spectrally sensitized to record red light with the use of a symmetrical thiacarbocyanine dye whose cationic portion is free from carboxyalkyl and alkylsulfate substituent groups, and to record green light with the use of symmetrical oxacarbocyanine dye whose cationic portion is free from carboxyalkyl and alkylsulfate substituent groups.

3,574,624
PHOTOGRAPHIC ELEMENTS CONTAINING DITHIOLIUM SALTS
George A. Reynolds and James A. Van Allan, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Feb. 8, 1968, Ser. No. 703,895
Int. Cl. G03c *1/72*
U.S. Cl. 96—89 18 Claims

Photographic elements having a support coated with a light-sensitive layer including a bleaching agent and a dithiolium salt which, upon exposure to activating radiation, is bleached to a colorless form, provide positive photographic images directly upon exposure. The sulfur atoms of the dithiolium salt nucleus can have either a 1,2- or a 1,3-relationship, and all carbon atoms in the nucleus can be substituted with such groups as hydrogen atoms, alkyl radicals, amino radicals, mono- or polycyclic aryl radicals and oxygen- or sulfur-containing heterocy-

clic radicals. Additionally, the dithiolium nucleus can form part of a fused ring aromatic structure in which any or all of the rings can be substituted with any of the above-noted substituents. The bleaching agent is a compound having a thiocarbonyl group such as a thiourea compound.

3,574,625

PHOTOGRAPHIC SYSTEMS WITH POLYVALENT METAL IONS CONTIGUOUS TO THE SILVER HALIDE GRAINS

Robert E. Bacon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 7, 1967, Ser. No. 629,091
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 17 Claims

A photographic, silver halide system containing silver halide grains having polyvalent ions occluded therein, said silver halide system having a halogen acceptor and trivalent or tetravalent metal ion salt contiguous to said polyvalent metal-containing silver halide grains. In the preferred embodiments the silver halide grains are formed in acidic media. In one aspect, the trivalent or tetravalent metal ion improves the chemical developing-out characteristics of good print-out emulsions.

3,574,626

PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING 1-CARBOMYLMETHYL-PYRAZOLONE COUPLERS

Friedrich-Wilhelm Kunitz, Leverkusen, Willibald Pelz, Opladen, and Fritz Nittel, Cologne-Stammheim, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,786
Claims priority, application Germany, Mar. 5, 1968, P 16 22 922.4
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 5 Claims

Photographic silver halide emulsion containing a magenta-forming 1-carbomylmethyl-pyrazolone coupler.

3,574,627

COLOR PHOTOGRAPHIC ELEMENTS

Max H. Stern and Gregory J. Lestina, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 6, 1969, Ser. No. 797,276
Int. Cl. G03c *1/90, 7/00*
U.S. Cl. 96—100 20 Claims

Nondiffusible hydroxylated trinuclear stabilizer compounds including the 2,2 - (β-isopropyl)-tetramethylene-6-chromanols, the 2,2-(β,β-dimethyl)-pentamethylene-6-chromanols and the 5a,6,7,8,9,9a - hexahydro-2-dibenzofuranols are advantageously incorporated in hydrophilic colloid layers of photographic elements in which color photographic dye images are to be stored for viewing. The stabilizer compounds protect dye images against the fading effects of prolonged exposure to light.

3,574,628

NOVEL MONODISPERSED SILVER HALIDE EMULSIONS AND PROCESSES FOR PREPARING SAME

Evan T. Jones, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 29, 1968, Ser. No. 701,092
Int. Cl. G03c *1/28*
U.S. Cl. 96—107 25 Claims

Novel monodispersed silver halide emulsions comprise silver halide grains formed in the presence of an organic thioether silver halide solvent.

3,574,629

DIRECT POSITIVE SILVER HALIDE EMULSIONS CONTAINING 2-IMINO-3-THIOZOLINE CYANINE DYES

Philip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 14, 1967, Ser. No. 660,172
Int. Cl. G03c *1/08*
U.S. Cl. 96—120 17 Claims

Novel cyanine dyes are provided which comprise first and second 5- to 6-membered nitrogen containing heterocyclic nuclei joined by a methine linkage; the first of said nuclei being a 2-arylimino (or alkylimino)-4-aryl (or alkyl)-3- thiazoline nucleus joined at the 5-carbon atom thereof to said linkage; and said second nucleus being joined at a carbon thereof to said linkage, to complete said cyanine dye.

3,574,630

STABILIZATION OF AQUEOUS SOLUTIONS OF CERTAIN DYES

Donald W. Heseltine and Frank G. Webster, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 521,529, Jan. 19, 1966. This application June 4, 1969, Ser. No. 830,482
Int. Cl. G03c *1/08, 1/10*
U.S. Cl. 96—130 10 Claims

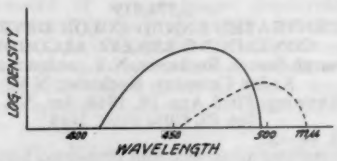
Photographic silver halide emulsions are spectrally sensitized with stable, aqueous solutions of acid substituted photographic spectral sensitizing dyes having a pH of about 6 to 7.5.

3,574,631

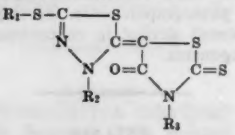
APOMEROCYANINE DYES AND PHOTOGRAPHIC EMULSIONS SENSITIZED THEREWITH

Mario Gandino, Ferrania, and Agostino Baldassarri, Savona, Italy, assignors to Ferrania, S.p.A., Milan, Italy

Filed Nov. 2, 1967, Ser. No. 680,172
Int. Cl. G03c *1/10*
U.S. Cl. 96—139 8 Claims



As a sensitizing dye an apomerocyanine of the formula



wherein R_1 and R_2 are alkyl or aralkyl and R_3 is alkyl, alkenyl or aryl, and photographic emulsions sensitized therewith.

3,574,632

PROCESS OF PREPARING A PELLETED ANIMAL FOOD FREE OF PATHOGENIC BACTERIA

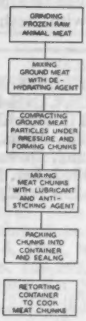
George T. Lanz, Kirkwood, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 480,015, Aug. 16, 1965. This application Aug. 8, 1969, Ser. No. 858,235
Int. Cl. A23k *1/20*
U.S. Cl. 99—2 1 Claim

Meal which is to be pelleted is introduced into a pressure chamber where a predetermined amount of moisture

is added to the meal as it is agitated and advanced through the chamber. The moistened meal is heated in the chamber to a predetermined temperature and retained therein for a sufficient length of time to effect destruction of substantially all the bacterial organisms in the meal with a minimum destruction of the nutritional value of the meal by avoiding cooking. Pelleting is accomplished by a ring-type pellet mill which augments said destruction without cooking.

3,574,633
METHOD OF MAKING AND PACKAGING PET FOOD
Ronald J. Flier, Glendale, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Jan. 26, 1967, Ser. No. 611,976
Int. Cl. A23k *1/00*; A23b *1/00*
U.S. Cl. 99—2 **7 Claims**


GRINDING FROZEN RAW ANIMAL MEAT
MIXING GROUND MEAT WITH DE-HYDRATING AGENT
COMPACTING GROUND MEAT PARTICLES UNDER PRESSURE AND FORMING CHUNKS
MIXING MEAT CHUNKS WITH LUBRICANT AND ANTI-STICKING AGENT
PACKING CHUNKS INTO CONTAINER AND SEALING
RETORTING CONTAINER TO COOK MEAT CHUNKS

The method of preparing and packaging an all-meat, so-called "chunk style" pet food involving the maintenance of the meat at low temperatures, below approximately 36° F., throughout forming of the meat into chunks and canning or packaging of the chunks, cooking of the meat being deferred until after packaging. The method includes the steps of grinding frozen raw animal meat to reduce the particle size of the meat, compacting the ground meat particles under a moderate pressure and forming the compacted particles into chunks while maintaining the temperature of the meat below 36° F., applying a lubricant to the chunks, packing the chunks into cans and heating the cans at a temperature of 245–250° F. to cook the chunks and coagulate the protein therein to produce a binding effect. The resulting product is in the form of distinct unitary chunks having a pleasing appearance and being of substantially uniform composition and quality the chunks retaining their integrity and shape at normal and heated temperatures.

3,574,634
LOW CALORIE FOODSTUFFS
Richard L. Singer, New York, N.Y., assignor to Calogics, Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 737,381, June 17, 1968. This application June 2, 1969, Ser. No. 829,719
Int. Cl. A21d *13/06, 13/04*; A23l *1/10*
U.S. Cl. 99—83 **17 Claims**

Low-calorie synthetic foodstuffs, namely doughs containing less than about 10 or 15 percent by weight of assimilable carbohydrate and consisting essentially of vital gluten, a non-nutritive edible filler, a vegetable gum, and water; dry mixes from which said doughs can be prepared by the addition of liquid; cooked and uncooked pasta products and leavened and unleavened baked goods, such as bread, breakfast cereals, and the like, prepared from said doughs.

3,574,635
BAKERY PRODUCT IMPROVING AGENT AND METHOD
Bert W. Landfried, Independence, Mo., and John R. Moneymaker, Overland Park, Kans., assignors to Top-Scor Products, Inc., Kansas City, Kans.
No Drawing. Continuation of application Ser. No. 604,174, Dec. 23, 1966. This application Feb. 18, 1969, Ser. No. 805,945
Int. Cl. A21d *2/16*
U.S. Cl. 99—91 **9 Claims**

The incorporation into a bakery dough of 12-hydroxy stearic alpha mono ester of glycerol improves tolerance against adverse effects of ingredient quality, formula and procedure variations. This agent also exhibits greater functionality than conventional emulsifiers in enhancing freshness retention, improving specific volume and body, and contributing to overall high quality in the resultant bakery product.

3,574,636
PRODUCT AND METHOD OF AGGLOMERATING FLOUR
Tibor A. Rozsa, Winona, Minn., assignor to Bay State Milling Company, Winona, Minn.
Filed May 5, 1967, Ser. No. 636,448
Int. Cl. A21d *2/36*
U.S. Cl. 99—93 **16 Claims**

A method of forming starchy flour into agglomerates wherein a relatively small proportion of the flour is segregated from the main body thereof and cooked in a relatively large quantity of water to at least partially gelatinize the starch in the flour, denature and disperse the protein, and form a low viscosity slurry. The thin binder is then atomized or otherwise dispersed into small droplets which are intimately mixed and contacted with the particles in the main body of the flour to cement them into agglomerates. These agglomerates are subsequently dried to safe storage moisture levels. The agglomerates are thereafter conveyed through a separating stage to remove unagglomerated particles therefrom, another process step to reduce oversized particles to a specified size, and a recycling stage which returns undersized particles to the inlet of the whole process, still oversized particles to the head of the reduction stage, and conveys agglomerates of the desired size to a finished product outlet.

3,574,637
CAKE MIXES FOR PREPARING LARGE, DELECTABLE CAKES
Arlee A. Andre, Douglas County, Nebr., assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Mar. 15, 1967, Ser. No. 623,212
Int. Cl. A21d *13/08*
U.S. Cl. 99—94 **3 Claims**

A dry prepared cake mix which provides large volume delectable cakes comprises (a) sugar; (b) flour, the ratio of sugar to flour being less than 1.1:1; (c) shortening containing (1) greater than 6% alpha-phase crystal-tending emulsifiers, and (2) greater than 0.1% high temperature batter stabilizers; (d) greater than 0.8% leavening soda; and (e) a slow-acting leavening acid selected from sodium aluminum phosphate, dicalcium phosphate, and glucono-delta-lactone.

3,574,638
FRENCH FRIED PRODUCTS AND PROCESS FOR PREPARING
Albert Henry Nagel and Thomas Patrick Finucane, Hartsdale, N.Y., assignors to General Foods Corporation, White Plaines, N.Y.
No Drawing. Filed May 13, 1968, Ser. No. 728,756
Int. Cl. A23l *1/00*; A22c *21/00, 25/00*
U.S. Cl. 99—100 **19 Claims**

A process of preparing French fried products comprising frying a food product in deep fat containing silica

gel. The fried product may be frozen and reheated if desired.

3,574,639
LIQUID CENTER CONFECTIONARY PRODUCT AND PROCESS FOR PRODUCING THE SAME
John H. Forkner, 2116 Mayfair Drive W., Fresno, Calif. 93703
Continuation-in-part of application Ser. No. 585,460, Oct. 10, 1966. This application Sept. 22, 1969, Ser. No. 864,940
Int. Cl. A23g 3/00
U.S. Cl. 99—138 6 Claims

A process for preparing syrup center coated confections having a center consisting of a caramel or fruit syrup, etc. covered with a chocolate coating. The center is first frozen before being coated and the formation of cracks and pinholes in the chocolate coating is prevented by the application of an intermediate layer of a buffer coating consisting of cheese; also products resulting from the process.

3,574,640
TREATMENT OF MUSTARD SEED
Paul A. Dougherty, Jr., Deerfield, Ill., assignor to Plochman, Inc., Chicago, Ill.
No Drawing. Filed Feb. 21, 1966, Ser. No. 528,811
Int. Cl. A23l 1/22
U.S. Cl. 99—140 6 Claims

Mustard seed is contacted with saturated steam for a time sufficient to inactivate the enzyme, myrosinase, to produce a mustard product having a controlled degree of bite and a non-toasted flavor.

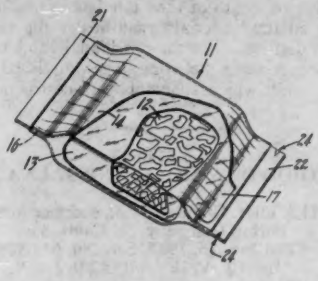
3,574,641
HIGH NEUTRALIZED PROPYLENE GLYCOL ALGINATE IN FRENCH DRESSING
John J. O'Connell, San Diego, and Darrell A. Betz, Placentia, Calif., assignors to Kelco Company, San Diego, Calif.
No Drawing. Filed Mar. 29, 1968, Ser. No. 717,445
Int. Cl. A23l 1/24
U.S. Cl. 99—144 2 Claims

A French dressing containing a propylene glycol alginate having the following characteristics:

Calcium content as CaO—less than about 0.7% by weight
Viscosity in 2% aqueous solution—100 to 2000 c.p.s.
Neutralization as sodium alginate—45 to 55%
Esterification—35–45%
Unreacted acidity—the balance and not less than about 3%
pH in 2% aqueous solution—4.0 to 5.0.

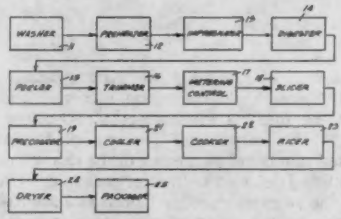
3,574,642
PACKAGE FOR AND METHOD OF PACKAGING MEATS
Karl Frederick Weinke, Neenah, Wis., assignor to American Can Company, New York, N.Y.
Continuation of application Ser. No. 499,811, Oct. 21, 1965. This application May 15, 1969, Ser. No. 826,087
Int. Cl. B65b 25/06, 31/00
U.S. Cl. 99—174 9 Claims

A package for and a method of packaging meats are disclosed wherein the package includes an inner oxygen-permeable member which may be either gas flushed or evacuated and an outer oxygen-impermeable member which may also be gas flushed or evacuated. The package preserves the freshness of the meat until the meat is ready to be marketed to the consumer. For marketing, the outer wrapper is removed and the inner package is displayed to the consumer. Being oxygen-permeable, the inner wrapper admits oxygen to the interior of the package causing the



fresh meat product to change to a bright red color which the consumer associated with freshness.

3,574,643
METHOD OF PRODUCING DEHYDRATED POTATO FLAKES
Arnold L. Lewis, Dowagiac, Mich., assignor to Overton Machine Company, Dowagiac, Mich.
Filed June 14, 1967, Ser. No. 646,023
Int. Cl. A23b 7/02, 7/03
U.S. Cl. 99—207 11 Claims



A method and apparatus for the production of dehydrated potato flakes wherein washed raw whole potatoes are heat-tempered and contacted with a caustic solution, with subsequent removal therefrom to allow impregnation to occur sufficient to effect at least a partial digestion of the outer portion of the potato before peeling, trimming, slicing, pre-cooking, cooling, cooking, ricing, drying and packaging. A system and apparatus for continuously filtering the wash water, the caustic solution and the heating fluids so as to recirculate them for reuse within a constant temperature cooling, pre-cooking and cooking apparatus providing greater economy.

3,574,644
METHOD OF RENDERING NORMALLY FLAMMABLE MATERIALS FLAME RESISTANT
Franciszek Olstowski, Freeport, and Wallace T. McMichael, John D. Watson, Sr., and Donald W. Pennington, Lake Jackson, Tex., William A. Foster, Midland, Mich., and Edward L. Hill, Littleton, Colo., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 22, 1965, Ser. No. 441,895
Int. Cl. C09d 5/14, 5/16; B28b 9/20
U.S. Cl. 106—15 5 Claims

This invention relates to a process for increasing the flame reistance of flammable materials and to the product produced thereby. Increased flame resistance is achieved by incorporating into a flammable material from about 2 to about 95 weight percent of heat expandable graphite

flakes. Upon contact with high temperature, the expandable graphite contained in the flammable material expands to form a tumid refractory insulating layer thereby preventing further combustion.

3,574,645

TRANSPARENT THORIA-BASE CERAMICS CONTAINING Y_2O_3 AND METHOD FOR PRODUCING SAME

Richard C. Anderson, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,994
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 5 Claims

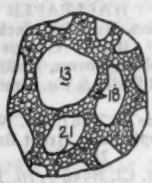
The preparation of high density thoria-base ceramic bodies containing up to about 5 mole percent of Y_2O_3 is disclosed. These bodies have high orders of in-line transmission of light and are prepared by pressing the mixed powders and sintering in a hydrogen-water vapor atmosphere until theoretical density is achieved.

3,574,646

HEAT RESISTANT MATERIALS

Marco Wismer, Gibsonia, Pa., Leonard D. Rood, Silver Spring, Md., and Joseph F. Bosso, Lower Burrell, Pa., assignors to PPG Industries Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 510,336, Nov. 29, 1965, which is a continuation-in-part of applications Ser. No. 348,229, Feb. 28, 1964, and Ser. No. 438,826, Mar. 3, 1965, both applications 510,336 and 438,826, being continuations-in-part of application Ser. No. 228,475, Oct. 4, 1962, which is a continuation of application Ser. No. 106,291, Apr. 28, 1961. This application Mar. 20, 1968, Ser. No. 714,496
Int. Cl. B28b *21/02*; C04b *21/00, 35/00*
U.S. Cl. 106—41 27 Claims



This invention relates to novel inorganic refractory foams, their precursors and methods of manufacture. The foams are formed by heating a filler, unsaturated polyester foam containing a refractory filler, a fluxing agent which is a compound of a metal of the first and second groups of the Periodic Table and, if desired, a heat resistant fibrous material, thereby consuming the polyester binder to produce the inorganic foam. Alternatively, the binder may be reduced to a carbonaceous state to provide an insulative material useful per se as a precursor for the inorganic foams.

3,574,647

LOW DENSITY ZEOLITE EXCHANGE CERAMICS AND METHOD

William H. Flank, Broomall, James E. McEvoy, Morton, and John R. Stuart, Brookhaven, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed Dec. 27, 1967, Ser. No. 693,733
Int. Cl. C04b *33/00*
U.S. Cl. 106—40 6 Claims

Low density porous ceramic substances are prepared from synthetic calcium-form crystalline zeolites by controlled heating at a temperature of about 900° to 1200° C. followed by cooling. The product is substantially non-zeolitic with X-ray-detectable crystallinity and features structural integrity with unusually low density.

3,574,648

METHOD FOR THE PRODUCTION OF SYNTHETIC CALCIUM SULFATE HEMIHYDRATE

Franz Wirsching, Bruno Wandser, and Karl Knauf, Iphofen, Germany, assignors to Gebr. Knauf Westdeutsche Gipswerke, Iphofen, Middle Franconia, Germany

Continuation-in-part of application Ser. No. 279,667, May 9, 1963. This application Dec. 18, 1967, Ser. No. 691,372
Int. Cl. C04b *11/02, 11/08*
U.S. Cl. 106—110 3 Claims

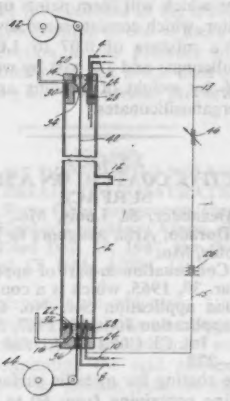
By-product gypsum arising in the extraction of phosphorus-containing minerals and contaminated with phosphoric acid and its water-soluble salts is calcined, the calcine is treated with water and a neutralising agent to form calcium sulfate dihydrate and water-insoluble compounds of the contaminants and the dihydrate is subjected to a second calcination to produce a synthetic calcium sulfate hemihydrate which has properties comparable to or better than those of plaster of Paris derived from natural gypsum.

3,574,649

PROCESS FOR PRODUCING CONTINUOUS BORON FILAMENTS

Roy Fanti, Springfield, Mass., and Urban E. Kuntz, East Hartford, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 24, 1967, Ser. No. 618,509
Int. Cl. C23c *11/00*
U.S. Cl. 117—106 8 Claims



A chemical deposition process for producing continuous filamentary materials, such as boron, by reducing a decomposable gas such as boron trichloride, on a resistively heated wire, the wire being drawn through a reactor incorporating reactant gas introduction at both ends thereof and a central exhaust to thereby provide both concurrent and countercurrent flow conditions within the reactor and differing gas compositions at the ends.

3,574,650

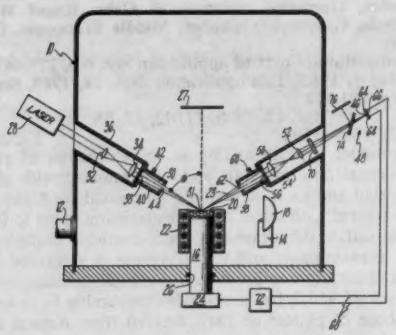
VACUUM VAPOR DEPOSITION WITH CONTROL OF ELEVATION OF METAL MELT

Randolph D. House, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 13, 1969, Ser. No. 806,956
Int. Cl. C23c *13/02, 13/12*
U.S. Cl. 117—107 5 Claims

In the processes for forming protective coatings on metal substrates, particularly the nickel-base and cobalt-

base superalloys, by melting a coating material to cause vaporization thereof, a monochromatic light beam is utilized in sensing and controlling displacement of the surface elevation of the melt.



3,574,651

WATER BASED PAINT COMPOSITIONS CONTAINING AN ALKALI METAL ORGANOSILICONATE

Siegfried Nitzsche, Ewald Pirson, and Michael Roth, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed Mar. 20, 1967, Ser. No. 624,171

Int. Cl. C08b *21/32*; C08g *47/00*; C09d *3/82*

U.S. Cl. 106—193 **7 Claims**

Compositions are disclosed which are useful as water based paints or which will form paints upon mixing with up to 80% water, which consist essentially of 18 to 100% by weight of a mixture of 0.07 to 1.0 part of alkali metal organosiliconate and 1.0 part by weight of pigment and up to 2% by weight of bonding agents other than alkali metal organosiliconates.

3,574,652

PROTECTIVE COATING ON A METALLIC SURFACE

Stephen H. Alexander, St. Louis, Mo., and Gilbert W. Tarver, El Dorado, Ark., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 444,019, Mar. 30, 1965, which is a continuation-in-part of abandoned application Ser. No. 64,258, Oct. 24, 1960. This application June 13, 1967, Ser. No. 645,629

Int. Cl. C09d *3/24, 5/08*

U.S. Cl. 106—278 **6 Claims**

A protective coating for metallic surfaces consisting of a primer coating containing from 60 to 40% by weight of a liquid hydrocarbon solvent and from 40 to 60% by weight of a non-air blown, solvent extracted asphalt having a penetration at 77° F. of 1 to 25 and a softening point of 140–220° F., and a bituminous finish coating compatible with said primer coating.

3,574,653

HIGH-PURITY SYNTHETIC PITCH

Theodore Edstrom, Parkview, Irwin C. Lewis, Lakewood, and Charles V. Mitchell, Shaker Heights, Ohio, assignors to Union Carbide Corporation

No Drawing. Continuation-in-part of application Ser. No. 196,906, May 23, 1962. This application July 26, 1966, Ser. No. 567,838

Int. Cl. C08h *13/08*

U.S. Cl. 106—279 **10 Claims**

A synthetic pitch having a softening point in the range from about 50° C. to about 250° C. and comprising acenaphthene and complex aromatized pyrolysis products of acenaphthylene polymers is produced by heating acenaphthylene to form a solid polymeric mixture, and then further heating the solid mixture so produced to cause it to liquefy and reflux to produce said pitch by pyrolysis of the polymers.

3,574,654

METHOD OF PRODUCING SPHEROIDAL AGGLOMERATES

Robert E. Cowan and E. Philip Ehart, Los Alamos, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed July 12, 1968, Ser. No. 744,319

Int. Cl. C09c *3/00*

U.S. Cl. 106—309 **5 Claims**

A method of forming spheroidal agglomerates of particles in which oleic acid is mixed with a powdered ceramic material, adding to this mixture ammonium hydroxide, and subsequently agitating.

3,574,655

METHOD FOR PREPARING FOAMED SILICATE GLASS

Aaron Goldsmith, Sepulveda, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

No Drawing. Filed May 4, 1967, Ser. No. 635,998

Int. Cl. C04b *33/00*

U.S. Cl. 106—402 **12 Claims**

Method of making foamed glass insulation by forming a mixture of a finely divided vaporizable metal with at least two glasses. The first glass becomes fluid at or near the boiling point of the metal and the second glass is miscible with the first glass to raise its viscosity. The entire mixture is heated to vaporize the metal and form cells within the molten glass, after which the viscosity of the glass is increased and the glass is cooled to solidification.

3,574,656

WALLPAPER

Barry John Sauntson, Rushden, Jack Bernard Haywood, Wellingborough, Brian George Elgood, Higham Ferrers, and Graham Brown, Wellingborough, England, assignors to Scott Bader & Co. Limited, Wellingborough, England

Filed June 19, 1967, Ser. No. 647,126

Claims priority, application Great Britain, June 23, 1966, 28,213/66

Int. Cl. B44d *1/10, 1/14*

U.S. Cl. 117—6 **16 Claims**

Ground coated wallpaper is provided with a washable and strippable coating by applying an aqueous emulsion of a copolymer consisting essentially of 30–80 parts by weight of vinylidene chloride and 70–20 parts by weight of an alkyl acrylate and/or methacrylate. Part of the alkyl acrylate or methacrylate may be replaced by acrylonitrile and/or methacrylonitrile, and other monomers may be present, notably the amide of acrylic or methacrylic acid, and/or a copolymerisable acid such as acrylic or methacrylic acid.

3,574,657

POLYMERIC IMAGES FORMED BY HEAT

Leo S. Burnett, Scarsdale, N.Y., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Dec. 14, 1967, Ser. No. 690,399

Int. Cl. B44c *1/22*; C41n *1/08*; B44d *1/46*

U.S. Cl. 117—8 **4 Claims**

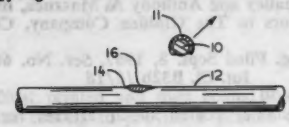
Polymeric images are formed by exposing a cured allylic resin coating to a heat pattern. The coating is removed in the heated areas leaving a cured polymeric image in the unheated areas. The resulting coating can be inked and used as a printing surface for producing printed copies.

3,574,658

DRY-LUBRICATED SURFACE AND METHOD OF PRODUCING SUCH SURFACES

Marion M. Fulk, Livermore, Calif., and John E. Schrodt, Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

Filed Dec. 22, 1967, Ser. No. 694,028
Int. Cl. B05b *17/00;* B24c *1/10*
U.S. Cl. 117—8 16 Claims



Dry lubricant such as molybdenum disulfide is applied to a solid surface by interposing the lubricant between the surface and a force generating means such as a peening particle, preferably by applying the lubricant initially to the particle, and then fusing the lubricant to the surface by bringing the force to bear upon the surface, and peened surfaces having dry lubricant impacted or fused thereon.

3,574,659

PROCESS OF TEXTURED RESINOUS SHEET PREPARATION

Harold Kwart, Newark, Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Mar. 28, 1969, Ser. No. 811,524
Int. Cl. B44d *1/14;* B32b *3/30*
U.S. Cl. 117—11 24 Claims

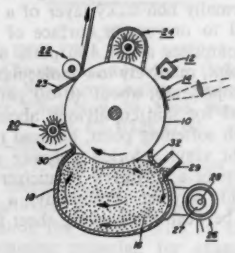
A process for producing a resinous composition having a textured or embossed surface which comprises selectively contacting a resinous polymer containing a hydrazine derivative dispersed therein with an oxidizing agent for said hydrazine derivative, thereby resulting in the in-situ formation of a gas generating blowing system. The embossed products resulting from this process.

3,574,660

ORBITAL DEVELOPER STREAM DEVELOPMENT

Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed July 25, 1966, Ser. No. 567,475
Int. Cl. G03g *13/08, 15/08*
U.S. Cl. 117—17.5 12 Claims



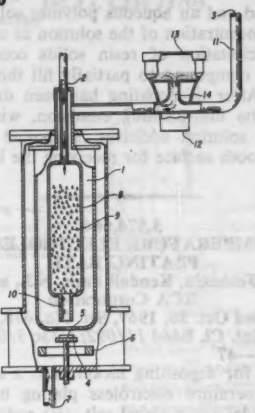
Electrostatic latent images are developed by developer material in a chamber having a curved bottom surface by transmitting to the developer material in contact with the chamber sufficient oscillatory energy to circulate a stream of the developer material in an orbital path in a substantially vertical plane, the oscillatory energy having an axis of oscillation perpendicular to the vertical plane and contacting the upper periphery of the stream of developer material with a surface bearing an electrostatic latent image.

3,574,661

DISPERSION STRENGTHENED METALS AND PROCESS FOR MAKING SAME

Gene F. Wakefield, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 27, 1966, Ser. No. 582,324
Int. Cl. B44d *1/12;* C23c *11/00*
U.S. Cl. 117—26 14 Claims



A method of providing a strong, ductile, and oxidation-resistant composite by chemically vapor depositing a metal on a substrate in the presence of refractory hard particles which are incorporated in the metal matrix. Exemplary is the decomposition of one or more metal halides by hydrogen reduction in the presence of alumina to incorporate the alumina in the metal matrix and provide a composite having the above-noted properties.

3,574,662

METHOD OF DEPOSITING POLYMERIC MATERIALS ON SUBSTRATES

John R. Gage, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Dec. 29, 1967, Ser. No. 694,373
Int. Cl. B44d *1/094, 1/12*
U.S. Cl. 117—27 2 Claims

A method of depositing a polymeric material on the surface of a substrate by applying an aqueous suspension of a polymeric material to the substrate surface and simultaneously precipitating the said polymeric material and removing the water portion from the suspension with a water absorbing material.

3,574,663

PROCESS OF METALLIZING A CATHODE-RAY TUBE SCREEN

Lester E. Schniepp, Barrington, Ill., assignor to Zenith Radio Corporation

No Drawing. Filed Jan. 15, 1968, Ser. No. 697,609
Int. Cl. C03c *17/12*
U.S. Cl. 117—35 6 Claims

The screen of a color cathode-ray tube having phosphor dots deposited by slurrying techniques is provided with an organic film as a substrate over which an aluminum layer is applied. The film is formed by distributing over the screen a coating of a water-based emulsion of an organic film-forming compound mixed with an aqueous solution of a polymeric compound. The aqueous solution is miscible with the film-forming emulsion and the polymeric compound has a lower volatilizing temperature than the film-forming compound. Drying of this coating forms the film or substrate for the aluminum layer. In bakeout of the tube, the polymeric compound vaporizes first and creates voids or ruptures in the aluminum layer,

facilitating egress of gases generated by volatilization of the formed organic film.

Where the phosphor deposits of the screen are laid down by electrostatic deposition, the film or substrate for the aluminized layer is formed in two discrete processes. In the first, the screen is coated with a similar mixture of a water-based emulsion of an organic film-forming compound and an aqueous polymer solution but now with such concentration of the solution as to effect partial physical precipitation of resin solids contained in the film-forming compound to partially fill the interstices of the screen. After this coating has been dried, a second coating of the film-forming emulsion, with or without the polymer solution additives is applied and dried to present a smooth surface for receiving the layer of aluminum.

3,574,664

ROOM TEMPERATURE ELECTROLESS NICKEL PLATING BATH

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

Filed Oct. 26, 1967, Ser. No. 678,373
Int. Cl. B44d *11/092*; C23c *3/02*
U.S. Cl. 117—47 **8 Claims**

A process for depositing nickel onto a substrate from a room temperature electroless plating bath; the bath initially includes (i) a nickel salt, (ii) sodium hypophosphite, (iii) sodium pyrophosphate, and (iv) ammonium hydroxide.

The concentration of ammonium hydroxide is chosen so as to adjust the pH of the bath to an initial value (between 9.0 and 11.5) corresponding to the desired plating rate. A strong base such as sodium hydroxide is then added to increase the pH of the bath above the initial value without substantially affecting the plating rate.

In use, the pH of the bath decreases, but the plating rate remains relatively unaffected so long as the pH does not drop below the initial value set by the ammonium hydroxide. This permits wider tolerances in pH control of the bath and alleviates the need for adding an accurately controlled amount of hydroxyl ion when the bath is regenerated.

ERRATUM

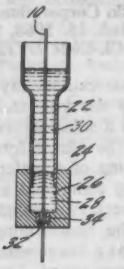
For Class 117—62.1 see:
Patent No. 3,574,620

3,574,665

PROCESS FOR COATING FILAMENTS WITH A RESIN

Malcolm Basche, West Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 12, 1968, Ser. No. 752,080
Int. Cl. B05c *3/12, 11/02*; B44d *1/06*
U.S. Cl. 117—64 **4 Claims**



A process for providing a moving substrate with a smooth and uniform overcoat of resin by passing a filament successively through a liquid resin and liquid mercury, the mercury acting both as a wiper and as a supporting sealant for the resin.

3,574,666

CERAMIC COATED METAL ARTICLES AND PROCESS THEREFOR

Howard F. Smalley and Authony A. Mazzuca, Baltimore, Md., assignors to The Glidden Company, Cleveland, Ohio

No Drawing. Filed Sept. 8, 1967, Ser. No. 666,495
Int. Cl. B32b *15/18*
U.S. Cl. 117—70 **3 Claims**

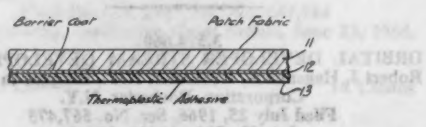
Porcelain enamel coated metal articles resistant to chalking when exposed to water and alkaline materials at temperatures above about 150° F. and methods for producing these articles have been discovered and are described. A novel, clear, virtually unpigmented, vitreous, solution-resistant glass composition is also described. The articles comprise a metal body or ground coated metal body having on at least one surface thereof a continuous base coat of a pigmented porcelain enamel composition and a second coat of the novel, virtually unpigmented, vitreous, clear glass composition. The coatings resist chalking which occurs when conventional porcelain enamel coated articles are exposed to water and alkaline or acid materials at temperatures above 150° F. One embodiment of a coated article is a chalk-resistant liner for automatic dishwashers wherein conventional porcelain enamel coated liners undergo chalking under ordinary use conditions.

3,574,667

THERMOPLASTIC ADHESIVE SHEET

Albert A. Fournier, Martinsville, N.J., assignor to Johnson & Johnson

Filed Jan. 5, 1968, Ser. No. 695,938
Int. Cl. C09j *7/04*
U.S. Cl. 117—76 **6 Claims**



An iron-on adhesive sheet comprising a flexible backing sheet, and a normally non-tacky layer of a thermoplastic adhesive applied to one major surface of said backing. The adhesive comprises about 100 parts of a relatively low softening point, relatively low molecular weight polar vinyl chloride copolymer, about 40–80 parts of a monomeric plasticizer for said copolymer, about 30–50 parts of relatively high softening point, unfused relatively high molecular weight vinyl chloride polymer particles, and about 40–60 parts of a polymeric plasticizer for said high molecular weight polymer. Preferably, a vinyl barrier layer is applied between the backing sheet fabric and the adhesive layer.

3,574,668

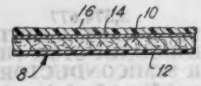
METHOD OF FORMING A RESIN COATED, PAPERBOARD PRODUCT AND RESULTANT ARTICLE

Jerome Alfred Cherney, Appleton, Wis., assignor to American Can Company, New York, N.Y.

Filed May 3, 1968, Ser. No. 726,395
Int. Cl. B44d *1/44*; B32b *29/00*
U.S. Cl. 117—64 **5 Claims**

A flexible fibrous sheet material, preferably paperboard is coated with a suitable liquid impervious coating such as polyethylene and the coating is cast by a chill roll hav-

ing a surface which imparts a uniformly low friction character and a commercially acceptable gloss surface to the coating. Containers made from such sheet mate-



rial are first printed and then coated with such liquid impervious coating to provide a printed container with a uniform coefficient of friction.

3,574,669

NONBLOCKING COATED SHEET MATERIAL

Arthur Ruthven Chase, Neenah, Wis., assignor to American Can Company, New York, N.Y.

No Drawing. Filed July 22, 1968, Ser. No. 746,241
Int. Cl. B32b *23/08*
U.S. Cl. 117—76 **1 Claim**

A flexible packaging sheet material bearing a tacky wax composition coating and a nonblocking overcoating of a polyamide.

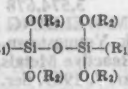
3,574,670

METHOD OF COATING A SUCTION BOX COVER WITH AN ORGANODISILOXANE

James W. Curry, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

No Drawing. Filed July 12, 1968, Ser. No. 744,329
Int. Cl. B05c *8/04, 8/00*
U.S. Cl. 117—99 **3 Claims**

New organodisiloxane compounds represented by the structural formula:



where R_1 is an alkyl radical having between 11 and 30 carbon atoms and R_2 is a radical selected from the group consisting of: methyl, ethyl, propyl and isopropyl radicals. A method for applying the disiloxane compounds to suction box covers includes the steps of distributing an organic solvent having the organodisiloxane dissolved therein over the suction box cover and evaporating the solvent.

3,574,671

METHOD FOR COATING METAL POWDERS

Thomas S. Cloran, East Liverpool, Ohio, assignor to Crucible Steel Corporation, Pittsburgh, Pa.

No Drawing. Filed Nov. 20, 1968, Ser. No. 777,495
Int. Cl. B22f *1/00*
U.S. Cl. 117—100 **5 Claims**

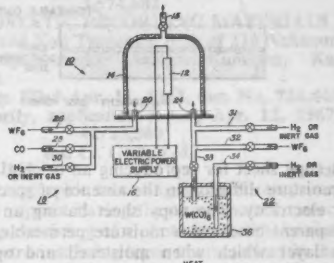
This invention relates to a method for preparing metal powders for compacting by powder metallurgy techniques. In particular it relates to an arrangement for uniformly coating the powder with an element, such as a carbon-containing material, for example lampblack, prior to compacting. This is achieved by agitating a charge of metal powder containing water while increasing the temperature of the powder to vaporize at least a portion of the water. In this manner the water is substantially evenly dispersed throughout the powdered metal. A quantity of the element to be coated on the powder is added in finely divided form and the powdered metal and element are further agitated in the presence of the water vapor, which causes the element to be substantially uniformly coated over and throughout the powder.

3,574,672

CVD PROCESS FOR PRODUCING TUNGSTEN CARBIDE AND ARTICLE OF MANUFACTURE

Donald A. Tarver, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application Aug. 5, 1964, Ser. No. 387,613, now Patent No. 3,389,977. Divided and this application Apr. 24, 1968, Ser. No. 761,354
Int. Cl. C23c *13/04*
U.S. Cl. 117—106 **7 Claims**


VARIABLE ELECTRIC POWER SUPPLY
WF6
CO
H2 OR INERT GAS
H2 OR INERT GAS
WF6
H2 OR INERT GAS
W(CO)6
WF6 + CO HEAT 400°C W2C (PARTICULATE)
WF6 + CO + H2 HEAT 400°C W2C (COHERENT)
WF6 + W(CO)6 HEAT 400°C W2C (PARTICULATE)
WF6 + W(CO)6 + H2 HEAT 400°C W2C (COHERENT)

Disclosed is a process for depositing a metal carbide in the form X_2C where X is taken from the group consisting of tungsten, molybdenum and chromium by heating a substrate to a temperature between about 400° C. and about 1300° C. and passing a reactant stream comprising a halide of the metal and carbon monoxide at about atmospheric pressure, or greater, over the substrate. The addition of hydrogen to the reactants results in a coherent mass of the carbide. A coherent layer of the carbide may be adherently deposited on a substrate such as steel by first passing a reactant stream comprising a halide of the metal X and hydrogen as a reducing agent over the heated substrate to deposit a thin layer of the metal X, then adding the carbon monoxide to the reactant stream to produce the metal carbide. The halide of the metal X is preferably a hexafluoride of the metal X and the carbon monoxide is preferably provided by the carbonyl of the metal X.

ERRATA

For Classes 117—106 and 117—107 see:
Patent Nos. 3,574,649 and 3,574,650

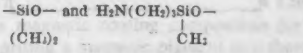
3,574,673

COATED CUTTING EDGES

Carl W. Schweiger, Coleman, Mich., assignor to Dow Corning Corporation, Midland, Mich.

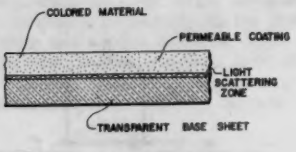
No Drawing. Continuation-in-part of application Ser. No. 798,770, Feb. 12, 1969. This application Apr. 24, 1969, Ser. No. 819,123
Int. Cl. B32b *15/08*
U.S. Cl. 117—132 **7 Claims**

Articles having fine cutting edges, such as razor blades, the edges of which are coated with copolymers of methylsiloxane and aminoalkylsiloxane units, such as



to reduce the cutting force necessary to utilize the article.

3,574,674
COPY SHEET FOR USE IN REPRODUCTION OF IMAGES FROM PRINTED SURFACES
William P. Taylor, Hamilton, Ohio, assignor to U.S. Plywood-Champion Papers Inc., Hamilton, Ohio
Filed May 1, 1967, Ser. No. 635,182
Int. Cl. B41m 5/00; B32h 27/08, 27/24
U.S. Cl. 117—138.8 **11 Claims**

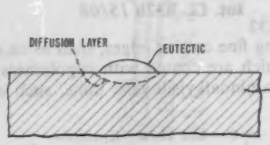


A copy sheet for reproducing an original printed sheet by moisture diffusion in the absence of special heat, light and electricity. The copy sheet having an impermeable transparent base and a moisture permeable, colored surface layer which when moistened and applied to the printed sheet for several seconds reproduces the printed image on the copy sheet in contrastingly visible color, readable from its transparent base side. The copy sheet being produced by forming a moisture permeable, thermoplastic surface layer containing a combined dye or pigment on a transparent impermeable base sheet.

3,574,675
METHOD OF AFFIXING OHMIC CONTACTS TO FERROMAGNETIC SEMICONDUCTOR BODIES
Frederic Holtzberg, Pound Ridge, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 19, 1968, Ser. No. 760,866
Int. Cl. C23f 17/00; C23c 13/02; C07f 11/00
U.S. Cl. 117—201 **22 Claims**

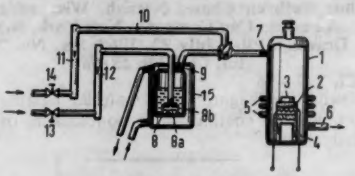
Good ohmic contacts are affixed to the surfaces of rare earth chalcogenide ferromagnetic semiconductors by vapor depositing a 1:1 metallic compound which is a component of the chalcogenide crystals onto the surface of the crystal. As an example, where the chalcogenide crystal has the general formula $Ln_{1-x}Ln'_xA$, Ln'A is vapor deposited on the crystal. The deposited compound is heated to cause it to partially diffuse into the semiconductor, and a conducting lead is soldered to the remaining ohmic dot.

3,574,676
OHMIC CONTACTS ON RARE EARTH CHALCOGENIDES
Richard J. Gambino, Yorktown Heights, and Stephen von Molnar, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 19, 1968, Ser. No. 760,900
Int. Cl. C23f 17/00; C23c 13/02; C07f 11/00
U.S. Cl. 117—201 **13 Claims**



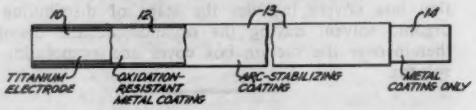
Good ohmic contacts are made to rare earth chalcogenide crystals. A low melting point alloy is prepared from rare earth elements and at least one conductive metal. The alloy is melted on the surface of the crystal and conductive leads attached thereto by soldering with an indium solder.

3,574,677
METHOD OF PRODUCING A PROTECTIVE LAYER FROM A SEMICONDUCTOR NITROGEN COMPOUND FOR SEMICONDUCTOR PURPOSES
Erich Pammer and Horst Panholzer, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed Apr. 28, 1967, Ser. No. 634,614
Claims priority, application Germany, May 2, 1966, S 103,522
Int. Cl. B44d 1/02, 1/18
U.S. Cl. 117—201 **7 Claims**



A method of producing a protective layer at the surface of a semiconductor crystal. Organic silicon nitrogen compounds are pyrolytically (thermally) precipitated from gaseous phase to form silicon nitride on the semiconductor.

3,574,678
TITANIUM WELDING ELECTRODE
Louis E. Stark, Youngstown, Ohio, assignor to Reactive Metals, Inc.
Filed Mar. 7, 1969, Ser. No. 805,253
Int. Cl. B23k 35/00
U.S. Cl. 117—204 **6 Claims**

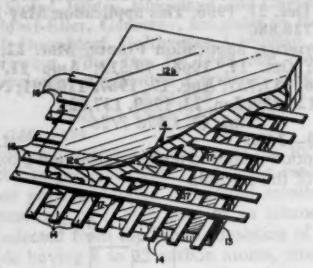


Titanium electrode which has a metal coating, preferably formed by dipping the electrode in a molten aluminum bath. This coating prevents the electrode from oxidizing during a welding operation. The electrode also has an arc-stabilizing coating of a halide salt. By use of this electrode, titanium bodies can be welded manually and the weld remains visible to the welder.

3,574,679
PROCESS FOR EMBEDDING OR ENCIRCLING POLYCRYSTALLINE MATERIALS IN SINGLE CRYSTAL MATERIAL
George R. Pulliam and John L. Archer, Anaheim, Calif., assignors to North American Rockwell Corporation
Filed Jan. 25, 1965, Ser. No. 427,804
Int. Cl. C23c 11/08
U.S. Cl. 117—212 **5 Claims**

A process for encircling a polycrystalline body in single crystal material. A single crystal seed is placed in a reactor adjacent the polycrystalline body. Chemical vapor

deposition is used to deposit epitaxially a single crystal material on the seed, growth being continued until the deposit builds onto and at least partially surrounds the body. The rate of deposition is controlled so that polycrystalline growth at nucleation sites on the polycrystalline body does not occur. In an exemplary embodiment, epitaxially grown monocrystalline ferrite embeds polycrystalline metallic conductors to form a structure useful as a magnetic memory.



3,574,680

HIGH-LOW OHMIC CONTACT DEPOSITION METHOD

John A. Perri and Jacob Riseman, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed May 7, 1968, Ser. No. 727,342
Int. Cl. C23c *11/02*; H01k *7/00*
U.S. Cl. 117—212 16 Claims

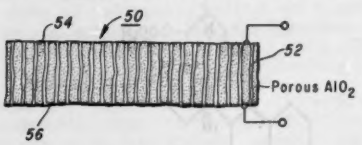
A method of forming an ohmic contact upon an area to be contacted upon a substrate, such as an active area upon a semiconductor device, comprising the steps of depositing from the vapor phase a metal to be deposited, while said area is maintained at a first temperature at which good adhesion between said area and said metal occurs; then completing the deposition at a second lower temperature, for a time during which no contact-impairing reactions may occur between said metal and said area; then cooling the area. Examples of given materials and temperatures are included.

3,574,681

ALUMINUM OXIDE HUMIDITY SENSOR

Olin B. Cecil, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application Mar. 31, 1966, Ser. No. 539,134, now Patent No. 3,440,372, dated Apr. 22, 1969. Divided and this application Oct. 9, 1968, Ser. No. 798,233
Int. Cl. H01c *13/00*; H01h *29/00*
U.S. Cl. 117—213 3 Claims



An aluminum oxide humidity sensor is fabricated by a sequence of steps beginning with the anodization of an aluminum body to form a surface layer of dense aluminum oxide on the aluminum body and a layer of porous aluminum oxide on the dense layer. The porous aluminum oxide is then separated from the dense aluminum oxide, and an electrode is formed on each of the opposite faces of the aluminum oxide, at least one of the electrodes being pervious to water vapor.

3,574,682

ELECTROSTATIC RECORDING MATERIALS

Satoru Honjo and Yoji Tsuneoka, both of 210 Nakanuma, Minami-Ashigara-machi, Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Apr. 11, 1968, Ser. No. 720,443
Claims priority, application Japan, Apr. 12, 1967, 42/23,300
Int. Cl. G03c *1/82*
U.S. Cl. 117—215 3 Claims

An electrostatographic recording material comprising a nonconductive support having thereon a member selected from the group consisting of a photoconductive insulating layer or an electro-insulating layer, characterized in that a layer having a low electric resistance comprising a member selected from the group consisting of polyvinylbenzene sulfonic acid and a water-soluble salt thereof is interposed therebetween.

3,574,683

PREPARATION OF MAGNETIC PARTICLES BY REACTING IRON, COBALT, OR NICKEL SALTS WITH PHTHALATE ION IN DIALKYL SULFOXIDE

Harold Kenneth Johnston II, Northglenn, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Jan. 14, 1969, Ser. No. 793,196
Int. Cl. H01f *10/00*; C22b *23/04*
U.S. Cl. 117—235 12 Claims

A method for preparing finely divided magnetic metal particles by dissolving a metal salt of nickel, cobalt, iron, or mixtures of these in a dialkyl sulfoxide bath, preferably dimethyl sulfoxide; reacting with phthalate ion in said bath; precipitating the metal phthalate reaction product by adding water to the bath; separating the precipitate; heating and reducing with hydrogen at elevated temperatures to produce metallic particles of cubic structure in a fine particle size range of about .01 micron to about 7 microns, which are useful in magnetic recording media and for preparing permanent magnets, magnetic cores, and magnetically responsive fluid compositions as are employed in magnetic clutches and the like. Precipitation of the metal phthalate is not achieved if aqueous solutions of metal salt and phthalate ion are mixed and dialkyl sulfoxide is added thereafter.

3,574,684

POLYURETHANE MAGNETIC COATING COMPOSITION

Louis M. Higashi, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

No Drawing. Filed May 26, 1965, Ser. No. 459,074
The portion of the term of the patent subsequent to Nov. 19, 1985, has been disclaimed
Int. Cl. H01f *10/02*
U.S. Cl. 117—237 4 Claims

A polyurethane magnetic coating composition for recording tape comprising a magnetic pigment in a thermosetting binder made from a low molecular weight diol, a high molecular weight polyester diol having a molecular weight between 10,000 and 30,000 and a triisocyanate.

3,574,685

MANUFACTURE OF MAGNETIC PARTICLES BY REACTING IRON, COBALT, OR NICKEL SALTS WITH OXALIC ACID SALTS IN DIALKYL SULFOXIDE

Robert S. Haines, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Jan. 14, 1969, Ser. No. 791,162
Int. Cl. H01f 10/02
U.S. Cl. 117—240 3 Claims

This invention relates to the preparation of high coercivity, finely divided acicular magnetic metal, alloy, or oxide particles by precipitation of oxalates of iron, nickel, cobalt, or mixtures of these metal oxalates from a bath containing dialkyl sulfoxide, preferably dimethyl sulfoxide. Oxalic acid or a soluble salt of oxalic acid which provides oxalate ions in solution is reacted with a soluble metal salt of iron, nickel, or cobalt dissolved in the bath. Precipitation is caused by the addition of water to the dialkyl sulfoxide bath. After separating and drying, the precipitate is decomposed, either by heat alone or by reduction with a reducing gas at elevated temperatures to produce metal particles which are oblong in shape and which vary in size from about 0.1 micron to 1.0 micron.

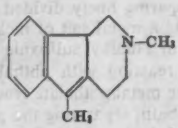
3,574,686

2,5 - DIMETHYL - 1,3,4,9B - TETRAHYDRO-2H-INDENO[1,2-c]PYRIDINE AND SALTS THEREOF

Ernst Jucker, Ettingen, Anton Ebnöther, Arlesheim, and Jean-Michel Bastian, Birsfelden, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed May 13, 1969, Ser. No. 824,274
Claims priority, application Switzerland, May 21, 1968, 7,561/68; Nov. 27, 1968, 17,652/68
Int. Cl. C07d 39/00
U.S. Cl. 260—293 1 Claim

The invention concerns 2,5-dimethyl-1,3,4,9b-tetrahydro-2H-indeno[1,2-c]pyridine of the formula:



and acid addition salts thereof. Processes for the production of the above compounds are also described.

The compounds are useful sedative-neuroleptics, and also possess useful antidepressant and analgetic properties. erties.

3,574,687

ION EXCHANGE RECOVERY OF OXAZOLE FROM NITRILE COMPOSITIONS AND REGENERATION OF THE RESIN

Claude Darcas and Claude Tcherkawsky, Saint-Avold, France, assignors to Ugine Kuhlmann

No Drawing. Original application May 23, 1967, Ser. No. 640,492. Divided and this application Aug. 8, 1969, Ser. No. 870,758
Int. Cl. C07d 85/44, 85/22; C07c 121/32
U.S. Cl. 260—307 4 Claims

This disclosure describes a procedure for the removal of oxazole and like compounds from the partially purified reaction product of the vapor phase catalytic reaction between an ethylenic hydrocarbon such as propylene with ammonia and air. The removal is effected by contacting the nitrile composition with a cationic ion exchange resin in the acid form. The disclosure also describes the regeneration of cationic ion exchange resins partially or totally saturated with weakly basic materials by contact with deionized water.

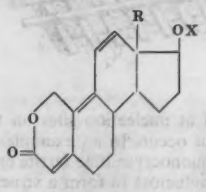
3,574,688

UNSATURATED 2-OXA STEROID DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Robert Bucourt and Lucien Nedelec, Clichy-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Continuation-in-part of abandoned applications Ser. No. 603,094, Dec. 20, 1966, and Ser. No. 603,457, Dec. 21, 1966. This application May 14, 1968, Ser. No. 728,880
Claims priority, application France, Mar. 22, 1966, 54,503; Oct. 11, 1966, 79,512; Aug. 11, 1967, 117,736, 117,737; Aug. 17, 1967, 118,091; Nov. 3, 1967, 126,899; Jan. 23, 1968, 137,029
Int. Cl. C07d 7/26
U.S. Cl. 260—343.2 15 Claims

This invention relates to novel unsaturated 2-oxa steroid derivatives of the formula



wherein R is alkyl having from 1 to 6 carbon atoms, X is selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, alkenyl having from 3 to 5 carbon atoms, cycloalkyl having from 5 to 7 carbon atoms, aralkyl having from 7 to 11 carbon atoms, cycloalkylalkyl having from 4 to 11 carbon atoms, alkylthioalkyl having from 2 to 5 carbon atoms, alkoxyalkyl having from 2 to 5 carbon atoms, and the acyl of an organic carboxylic acid having from 1 to 18 carbon atoms, as well as the process of preparing the same. These compounds have an anabolic action coupled with an androgenic action.

3,574,689

6,1'-SPIROCYCLOPROPYL PROGESTERONES AND PROCESSES

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 24, 1965, Ser. No. 442,513
Int. Cl. C07c 169/34
U.S. Cl. 260—397.4 17 Claims

This disclosure relates to 6,1'-spirocyclopropylprogesterones, intermediates and processes for their production. The compounds are of value for their progestational and anti-inflammatory activity.

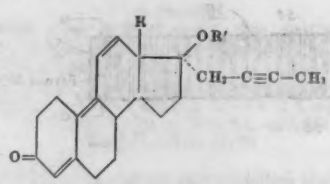
3,574,690

$\Delta^{4,9,11}$-GONATRIENE-3-ONES

André Pierdet, Noisy-le-Sec, and Georges Muller, Nogent-sur-Marne, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Nov. 13, 1968, Ser. No. 775,546
Claims priority, application France, Nov. 17, 1967, 128,724
Int. Cl. C07c 169/22
U.S. Cl. 260—397.45 3 Claims

$\Delta^{4,9,11}$-Gonatriene-3-ones of the formula



(I)

wherein R is alkyl of 1 to 3 carbon atoms and R' is selected from the group consisting of hydrogen and an acyl

radical of 1 to 18 carbon atoms and novel process and intermediates therefor, the said products having progestomimetic and hypophysial inhibiting activity.

3,574,691

PREPARATION OF FACTICE-LIKE PRODUCTS

Gerhard Stolpa, Hilden, Rhineland, and Guntram Walther, Dusseldorf-Eller, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Holthausen, Germany

No Drawing. Filed Jan. 16, 1968, Ser. No. 698,112
Claims priority, application Germany, Feb. 25, 1967, H 61,958
Int. Cl. C08h *3/00, 9/02*
U.S. Cl. 260—399 7 Claims

This invention relates to a process for the production of factice-like products which comprises reacting (1) an anhydrous polyunsaturated compound selected from the group consisting of (a) an ester of an alkanepolyol with an acid selected from the group consisting of unsaturated fatty acids having 8 to 22 carbon atoms, unsaturated hydroxy fatty acids having 8 to 22 carbon atoms, resin acids and mixtures of the said acids, and (b) an oxidized polymer of said ester with (2) an anhydrous mixture of disulfurdichloride and a phosphorus halide, and recovering said factice-like products. The invention also relates to the factice-like products so produced which are useful in the same manner as factice.

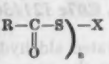
3,574,692

STABILIZED HALOGEN CONTAINING POLYMERS

Walter Stamm, Tarrytown, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Jan. 12, 1967, Ser. No. 608,751, which is a continuation-in-part of application Ser. No. 586,045, Oct. 12, 1966. Divided and this application Aug. 2, 1968, Ser. No. 763,463
Int. Cl. C08h *9/02*
U.S. Cl. 260—399 6 Claims

Novel compounds useful as stabilizers for halogen containing polymers such as polyvinyl chloride are represented by the formula:



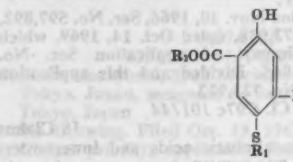
wherein R is a hydrocarbyl group, *n* is an integer having a value of from 1 to 2, and X is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, and acryl moieties having a hydrocarbyl residue.

3,574,693

ALKYLTHIO SUBSTITUTED HYDROXYBENZOIC ACIDS AND ORGANOTIN SALTS THEREOF

Charles H. Fuchsman, Cleveland Heights, and William H. Meek, Northfield, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 768,878, Oct. 18, 1968. This application Oct. 24, 1969, Ser. No. 869,358
Int. Cl. A01n *9/12;* C07c *149/40;* C07f *7/22*
U.S. Cl. 260—429.7 6 Claims



wherein R_2 is H or methyl, R_1 is an alkyl of from 1 to 12 carbon atoms, or aralkyl of from 7 to 12 carbon atoms, R_3 is H or $Sn[(CH_2)_nH]_z$ wherein *z* is an integer of from 2 to 3 inclusive, *n* is an integer of from 1 to 8 inclusive, and provided that both R_2 and R_3 are not both H. The compounds are useful as bacteriostats and fungistats.

3,574,694

PREPARATION OF BETA-CHLORO ISOCYANATES

James L. Harper, Laurel, and David A. Daniels, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Jan. 17, 1968, Ser. No. 698,415
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 4 Claims

The ethylenically unsaturated group of an organic compound is converted to a beta-chloro isocyanato group by the use of Cl_2, and isocyanic acid in the presence of an iodoaryl compound.

3,574,695

TWO-STAGE PHOSGENATION PROCESS FOR PRODUCING ORGANIC ISOCYANATES

Brenton R. Grant, Jr., Wilmington, and Carl F. Irwin, New Castle, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1968, Ser. No. 720,630
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 6 Claims

In continuous processes for phosgenating organic amines in inert solvents to form isocyanates, hydrochloride persistence and hold times are minimized by continuously contacting in a secondary reaction zone the reaction product from a primary reaction zone with at least 0.75 mole of phosgene per equivalent of organic amine fed to the primary reaction zone, said secondary zone providing an average liquid residence time of about 5 to 45 minutes at at least 130° C., and continuously removing from the secondary zone a gaseous mixture of phosgene and by-product hydrogen chloride and a solution of organic isocyanate.

3,574,696

ACETYLENIC DIPERESTERS

Ronald L. Friedman, San Rafael, and Roger N. Lewis, Pinole, Calif., assignors to Argus Chemical Corporation, San Rafael, Calif.

No Drawing. Continuation-in-part of application Ser. No. 511,354, Dec. 3, 1965. This application Aug. 1, 1968, Ser. No. 749,339
The portion of the term of the patent subsequent to May 13, 1986, has been disclaimed
Int. Cl. C07c *69/00*
U.S. Cl. 260—453 9 Claims

Aliphatic diperesters of alkyne diols useful as polymerization initiators.

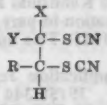
3,574,697

HALOALKYLENE BISTHIOCYANATES

Richard Parke Welcher, Old Greenwich, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 27, 1968, Ser. No. 732,049
Int. Cl. C07c *161/02*
U.S. Cl. 260—454 10 Claims

Haloalkylene bisthiocyanates of the formula



in which X is halogen, Y is hydrogen, halogen, phenyl or alkyl of 1 to 16 carbon atoms, R is hydrogen, phenyl, lower alkylphenyl, or alkyl of 1 to 16 carbon atoms, and

cycloaliphatic bis-thiocyanates in which R and Y represent the residue of a cycloaliphatic ring of from 5 to 10 carbon atoms are prepared by reacting thiocyanogen with the corresponding halo-olefins. The new haloalkylene bisthiocyanates are highly active bactericides, fungicides and algicides and are effective in alkaline waters as well as under neutral and acid conditions.

3,574,698

PREPARATION OF SALTS OF 2-MERCAPTOETHYLAMINES AND THEIR S-ACYL ANALOGS

Stanley J. Brois, Cranford, and Harry W. Barnum, Elizabeth, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed July 19, 1967, Ser. No. 654,368
Int. Cl. C07c *153/07*
U.S. Cl. 260—455 10 Claims

S-acyl-2-mercaptoethylamine salts are formed by reacting an aziridine compound with a thiol carboxylic acid and a strong acid at low temperatures. Preferably, the reaction is conducted in the presence of a polar organic diluent. Salts of the 2-mercaptoethylamines can be prepared from their S-acyl analogs through the use of an alcoholysis or hydrolysis reaction.

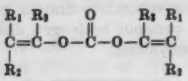
3,574,699

PROCESS FOR THE PREPARATION OF DIVINYL CARBONATES

David Rhum, Westfield, and George L. Moore, South Plainfield, N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.

No Drawing. Filed Nov. 1, 1966, Ser. No. 591,094
Int. Cl. C07c *69/00*; C08g *17/13*
U.S. Cl. 260—463 3 Claims

Vinyl monomers of the formula



wherein R_1, R_2 and R_3 are hydrogen or alkyl, are produced by reacting phosgene with a mercury compound of the appropriate aldehyde or ketone, suitably in the presence of a tertiary amine.

3,574,700

PROCESS FOR PREPARING DINITRILES

Robert T. Somich, Lake Jackson, Tex., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 12, 1968, Ser. No. 736,299
Int. Cl. C07c *121/10*
U.S. Cl. 260—465.2 6 Claims

Boron phosphate containing minor amounts of sulfate- and/or sodium-containing salts provides an improved dehydration catalyst for the synthesis of nitriles from carboxylic compounds or derivatives thereof and ammonia.

3,574,701

PROCESS FOR PRODUCING ETHYLENICALLY UNSATURATED ALIPHATIC NITRILES

Naoya Kominami, Tokyo, Hitoshi Nakajima, Urawa-shi, and Nobuhiro Tamura, Tokyo, Japan, assignors to Asachi Kasei Kogyo Kabushiki Kaisha, Asaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 489,750, Sept. 23, 1965. This application May 6, 1969, Ser. No. 822,300
Claims priority, application Japan, Oct. 15, 1964, 39/58,344
Int. Cl. C07c *121/04*
U.S. Cl. 260—465.3 5 Claims

Process for producing ethylenically unsaturated aliphatic nitriles of acrylonitrile, methacrylonitrile, crotonitrile, 1-cyano-butene-1, 2-cyano-butene-1, 2-cyano-butene-2 and 1-cyano-2-methyl-propene-1, by reacting an olefinic hydrocarbon containing 2 to 4 carbon atoms i.e. ethylene, propylene, normal butylene and isobutylene with hydrogen cyanide and oxygen or a molecular oxygen containing gas in the gaseous phase in the presence of a catalyst selected from the group consisting of the oxides of rhodium selected from the group consisting of RhO, Rh_2O_3, RhO_3 and RhO_2; the hydroxides of palladium and rhodium selected from the group consisting of $Pd(OH)_2$, $Pd(OH)_4$, $Rh(OH)_3$ and $Rh(OH)_4$; the chlorides of palladium and rhodium selected from the group consisting of PdCl, $PdCl_2$, $PdCl_3$, $PdCl_4$, $RhCl_2$ and $RhCl_3$; the bromides of palladium and rhodium selected from the group consisting of $PdBr_2$ and $RhBr_3$; the nitrates of palladium and rhodium selected from the group consisting of $Pd(NO_3)_2$ and $Rh(NO_3)_3$; $Pd(CN)_2$ and $Pd(OCOCH_3)_2$ at a temperature of 200° C.

3,574,702

PROCESS FOR DIMERIZING ACRYLONITRILE COMPOUNDS

Julian Feldman and Bernard A. Saffer, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 271,463, Apr. 8, 1963. This application Mar. 2, 1965, Ser. No. 436,648
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.8 8 Claims

2-methyleneglutaronitrile is prepared via tertiary phosphine catalyzed dimerization of acrylonitrile.

3,574,703

SYNTHESIS OF ALPHA,BETA-UNSATURATED NITRILES

Hugh J. Hagemeyer, Jr., Alden E. Blood, and Thomas C. Snapp, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1967, Ser. No. 677,393
Int. Cl. C07c *121/30, 121/32*
U.S. Cl. 260—465.9 5 Claims

Alpha,beta-unsaturated aldehydes, ketones, nitriles and esters are formed by the vapor phase condensation of saturated aldehydes, ketones, nitriles and alkyl esters of aliphatic monocarboxylic acids with formaldehyde in the presence of an unmodified silica gel catalyst. The activity and effectiveness of the catalysts is a function of their pore volume and surface area. The use of the silica gel catalyst systems give improved conversions and yields of unsaturated product and is accompanied by retention of catalyst activity at a high level.

3,574,704

N(α-NAPHTHYL)AMINOALIPHATIC ACIDS

Volkert Claassen, Weesp, Hendricus Obias Huisman, Amstelveen, and Gerardus Henricus Maria Mos, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Application Nov. 30, 1966, Ser. No. 597,892, now Patent No. 3,472,938, dated Oct. 14, 1969, which is a continuation-in-part of application Ser. No. 486,224, Sept. 9, 1965. Divided and this application Mar. 19, 1968, Ser. No. 723,972
Int. Cl. C07c *101/44*
U.S. Cl. 260—471 18 Claims

N(α-naphthyl) aminoaliphatic acids and lower esters thereof are disclosed. The naphthyl group may be substituted by halogen, alkyl or alkoxy radicals. Examples of the compounds are N(6-methoxy-α-naphthyl)-3-aminopropionic acid, N-(α-naphthyl)-2,2-dimethyl - 3 - aminopropionic acid and N-(6-methoxy-α-naphthyl)-3-methyl-

3 aminopropionic ethylester. The compounds exhibit tranquilizer activities. This abstract is in no way intended to be a description of the invention defined by the claims.

3,574,705
PREPARATION OF UNSATURATED ESTERS OF CARBOXYLIC ACIDS
Gustave B. Linden, Short Hills, N.J., and Walter Brooks, Whittier, Calif., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Aug. 30, 1967, Ser. No. 664,275
Int. Cl. C07c *69/60, 69/80, 69/82*
U.S. Cl. 260—475 **9 Claims**

Allylic esters of organic carboxylic acids are prepared by heating an alkali metal salt of an organic carboxylic acid with an allylic halide at a temperature of 55° to 80° C. in the presence of a zinc promoted copper catalyst.

3,574,706
PROCESS FOR THE PREPARATION OF ESTERS OF DICARBOXYLIC ACIDS
Guidobaldo Cevidalli, Seveso, and Giuseppe Caprara and Giorgio Montorsi, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Filed Mar. 6, 1968, Ser. No. 710,743
Claims priority, application Italy, Mar. 7, 1967, 13,447/67
Int. Cl. C07c *69/44, 69/50, 69/80*
U.S. Cl. 260—475 **8 Claims**

Process for the preparation of esters of dicarboxylic acids (especially maleic acid, adipic acid, pimelic acid, sebacic acid and phthalic acids), wherein the alkali-metal salt of the acid is reacted at 120° to 190° C. in suspension with a secondary alkyl halide having 4 to 15 carbon atoms in the presence of a catalyst consisting essentially of pyridine, sodium or potassium iodide and an organic catalysis promoter (e.g., phenol, hydroquinone, chlorobenzene, nitrobenzene, chlorophenol, cresol, dimethylaniline) or monoesters of dicarboxylic acids (e.g., as formed in a previous reaction system).

3,574,707
BENZOIC ACID ESTERS OF MONOHYDROALKYL-CARBORANES
Saiyid M. Naqvi, Dover, Martin J. Socha, Wayne, and Marvin M. Fein, Westfield, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.
No Drawing. Original application Sept. 17, 1964, Ser. No. 397,292, now Patent No. 3,409,663. Divided and this application July 1, 1968, Ser. No. 752,427
Int. Cl. C07c *69/76, 69/84*
U.S. Cl. 260—476 **2 Claims**

Benzoic acid esters of monohydroxy-alkylcarboranes in which the alkyl group has from 1 to 8 carbon atoms. The esters have utility as ultraviolet light absorbants.

3,574,708
BISPHENOL FORMATES
Keisuke Murayama, Syoji Morimura, and Hideo Horiuchi, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
No Drawing. Filed Oct. 19, 1967, Ser. No. 676,621
Claims priority, application Japan, Oct. 27, 1966, 41/709,000
Int. Cl. C07c *69/06*
U.S. Cl. 260—479 **5 Claims**

Bisphenol formate derivatives which are useful as stabilizers against the photo- and/or thermal-deterioration of various polymers, such as polyolefins, polyacetals, polyurethanes and the like. These bisphenol formate derivatives are prepared by reaction of the corresponding bisphenol derivatives with a Vilsmeier reagent.

3,574,709
CARBAMYL THIOETHERS
Alfred Froehlich, Marly-le-Grand, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Filed Oct. 18, 1967, Ser. No. 676,031
Claims priority, application Switzerland, Oct. 27, 1966, 15,582/66
Int. Cl. C07c *127/22, 149/20*
U.S. Cl. 260—481 **7 Claims**

The present invention provides new thioethers which are suitable for sensitizing photographic material containing a silver halide.

3,574,710
CARBAMATES CONTAINING NF_2 GROUPS
James E. Coleman, Edison, Lawrence J. Engel, Dunellen, and Ferdinand Cataneo, Cranford, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed June 3, 1963, Ser. No. 286,108
Int. Cl. C07c *125/04*
U.S. Cl. 260—482 **16 Claims**

1. A carbamate of an energetic alcohol containing oxidizing groups of the class consisting of $—NF_2$ and $—NO_2$ as substituents of a hydrocarbon moiety in the alcohol and a tris(NF_2)methyl radical linked through a carbamate ester linkage to said hydrocarbon moiety of the alcohol in substitution for a hydroxyl function of the alcohol.

9. The process for preparing a carbamate of an energetic alcohol containing oxidizing groups consisting of NF_2 and NO_2 as substituents which comprises reacting tris(NF_2)methyl isocyanate with the energetic alcohol to form the carbamate and recovering the resulting carbamate.

3,574,711
PRODUCTION OF ALKYL CARBAMATES
Max O. Robeson, Salisbury, N.C., assignor to Proctor Chemical Company, Inc., Salisbury, N.C.
No Drawing. Filed May 14, 1968, Ser. No. 728,916
Int. Cl. C07c *103/12*
U.S. Cl. 260—482 **7 Claims**

Use of zinc compounds as catalysts greatly increase product yield, reduce reaction time and provide further improvements over known methods of producing alkyl carbamates by reaction of an alkanol with urea. Zinc oxide is most effective as the catalyst and permits a product yield of above 90% in production of n-butyl carbamate from butanol and urea. The products may be reacted with formaldehyde to form methylol derivatives that are effective as textile crease-proofing agents.

3,574,712
PREPARATION OF ESTERS
Herman S. Bloch, Skokie, and Louis Schmerling, Riverside, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Dec. 11, 1967, Ser. No. 689,263
Int. Cl. C07c *69/14, 69/50, 69/82*
U.S. Cl. 260—485 **10 Claims**

Esters of carboxylic acids are prepared in a cyclic process by reacting a saturated hydrocarbon and the corresponding alkyl metaborate with an oxygen-containing gas to form a dialkyl borate which is then divided into two equal portions. One portion is treated with carboxylic acid and water to yield the desired ester and an aqueous solution of boric acid. This boric acid is then heated with

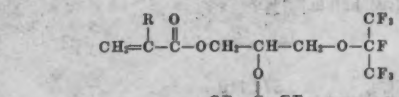
the second portion of the dialkyl borate to form the alkyl metaborate which is recycled to the first step of the process.

3,574,713
FLUORINATED ACRYLIC AND METHACRYLIC ESTERS

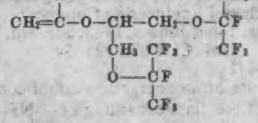
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application June 7, 1966, Ser. No. 555,703, now Patent No. 3,418,449. Divided and this application May 23, 1969, Ser. No. 827,163
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 **9 Claims**

The process for preparing compounds having the formulae



and



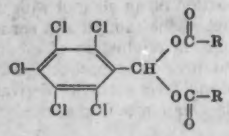
by reacting alkali metal fluoride with hexafluoro acetone and subsequently adding 2,3 dihalo-n propyl ester of acrylic or methacrylic acid, and stirring the reaction mixture at temperatures of 70° to 100° C.

3,574,714
α,α-DIACYLOXY-2,3,4,5,6-PENTACHLORO-TOLUENE DERIVATIVES

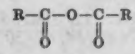
Akira Fujinami, Takarazuka-shi, Katsuji Nodera, Nishinomiya-shi, Yoshihiko Nishizawa, Nara-shi, and Toshiaki Ozaki and Sigeo Yamamoto, Toyonaka-shi, and Toshiyuki Wakatsuki, Kyoto, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Feb. 5, 1968, Ser. No. 702,813
Claims priority, application Japan, Feb. 22, 1967, 42/11,629; Mar. 1, 1967, 42/13,330
Int. Cl. C07c *69/62*; A01n *9/24*
U.S. Cl. 260—487 **5 Claims**

A novel α,α-diacyloxy-2,3,4,5,6-pentachlorotoluene derivative represented by the formula,



wherein R is a lower alkyl group, a lower alkenyl group or a halogen-substituted-lower alkyl group, is prepared by reacting pentachlorobenzaldehyde with an acid anhydride represented by the formula,



wherein R has the same meanings as identified above.

Typical examples of the groups represented by R are methyl, chloromethyl, ethyl and n-propyl.

The compounds thus obtained have an excellent fungicidal activity, very low toxicity to fish and warm blooded animals and have no phototoxicity on crops.

3,574,715
UNSATURATED CARBONYL COMPOUND

Roman Marbet, Riehen, Switzerland, and Gabriel Saucy, Essex Fells, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Application Sept. 5, 1968, Ser. No. 757,798, which is a division of application Ser. No. 319,980, Oct. 30, 1963, which in turn is a continuation-in-part of application Ser. No. 290,960, June 27, 1963. Divided and this application Nov. 26, 1969, Ser. No. 877,582
Int. Cl. C07c *69/14*
U.S. Cl. 260—488 **1 Claim**

Derivatives of 1-penten-3-al which are useful as odorants in perfume compositions.

3,574,716
HYDROGENATION OF ALDEHYDES AND KETONES

Robert Stevenson Coffey, Norton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 555,215, June 6, 1966. This application July 2, 1968, Ser. No. 741,859
Claims priority, application Great Britain, June 11, 1965, 24,771/65
Int. Cl. C07c *29/14, 67/00*
U.S. Cl. 260—494 **11 Claims**

Olefinic or acetylenic compounds, aldehydes or ketones are hydrogenated by hydrogen in the presence of an iridium complex of formula $IrHY_2L_n$, in which Y is hydrogen or an anionic element or group such as carboxylate, L is a ligand such as a trialkyl or aryl phosphine, and *n* is 2 or 3.

3,574,717
PROCESS FOR THE PRODUCTION OF UNSATURATED ORGANIC COMPOUNDS

John Edward Lloyd, Norton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 27, 1967, Ser. No. 625,948
Claims priority, application Great Britain, Apr. 7, 1966, 15,653/66
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 **12 Claims**

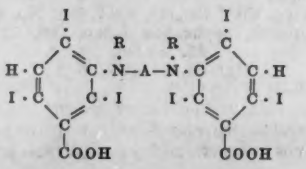
Allene and substituted allenes react with certain specified nucleophiles including carboxylic acids, alcohols, water and hydrogen cyanide in the presence of a Group VIII noble metal salt catalyst, e.g., palladous acetate to give allyl and isopropenyl derivatives. The reaction may be carried out in the presence of a redox system such as a copper salt which may optionally be regenerated by means of molecular oxygen.

3,574,718
METHOD FOR PRODUCING X-RAY CONTRAST AGENTS

Lars Björk, Uno E. Erikson, Björn G.-A. Ingelman, and Bernt J. Lindberg, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Dec. 11, 1967, Ser. No. 689,282
Claims priority, application Sweden, Dec. 13, 1966, 17,052
Int. Cl. C07c *101/48, 103/32*
U.S. Cl. 260—501.11 **22 Claims**

Iodine compounds of the formula:



wherein R is a lower acyl group having no more than 5 carbon atoms and wherein A is an alkylene group substituted by at least one substituent of the formula —O—R_1 wherein R_1 is a hydrogen or a lower alkyl or a lower acyl group having no more than 5 carbon atoms, said alkylene group containing from 3 to 15 inclusive carbon atoms and being optionally broken by one or more oxygen bridges; or physiologically acceptable salts thereof; and their method of preparation are provided. These compounds are especially useful as X-ray contrast agents.

3,574,719

HALOAKYL PHOSPHINIC ACIDS AND THEIR APPLICATION TO COTTON

Leon H. Chance and Ethel K. Leonard, New Orleans, and George L. Drake, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application May 3, 1967, Ser. No. 635,680, now Patent No. 3,484,184. Divided and this application Jan. 24, 1969, Ser. No. 823,206

Int. Cl. C07f *9/30;* **D06m** *13/28*

U.S. Cl. 260—502.4 **2 Claims**

Bis(chloromethyl)phosphinic acid is prepared by a new method; other phosphinic acids are prepared by reacting certain ketones with hypophosphorus acid; and new cellulosic derivatives are prepared by crosslinking fibrous cellulose with these phosphorus containing compounds.

3,574,720

ALKYLATED CYCLE OIL AND THE SULFONATE DERIVED THEREFROM

Albert N. De Vault, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 12, 1965, Ser. No. 471,045

Int. Cl. C07c *143/24;* **C10m** *1/40*

U.S. Cl. 260—505 **5 Claims**

A light cycle oil having a boiling range of about 400 to 675° F. is contacted with an alkylation catalyst under alkylating conditions so as to produce a product containing alkylated aromatics produced by alkylating the aromatics present in the cycle oil with the olefins also present in the cycle oil. The alkylate, particularly after hydrogen treating, is useful as a motor grade lubricating oil and as a general purpose lubricating oil or non-staining rubber extender oil and when sulfonated with a sulfonating agent and neutralized with a basic metal compound provides a superior lubricating oil additive.

3,574,721

PREPARATION OF ANTIFIBRINOLYTICALLY ACTIVE ISOMER OF 4-AMINOMETHYL-CYCLOHEXANE CARBOXYLIC ACID

Bengt Olof Melander and Gunnar Hanshoff, Stockholm, Bengt Ragnar Gustaf Granstrand, Vallentuna, and Berit Margareta Olsson, Trangsund, Sweden, assignors to AB Kabi, Stockholm, Sweden

No Drawing. Filed Dec. 9, 1964, Ser. No. 417,235

Int. Cl. C07c *101/04*

U.S. Cl. 260—514 **4 Claims**

Disclosed and claimed is the preparation of the 4-aminomethyl-cyclohexane carboxylic acid isomer assaying at least about 90% antifibrinolytically active material from specific para-disubstituted cyclohexane starting material. For example, in 4 - aminomethyl - cyclohexane methanol such as its isomer melting at 118° C. in a series of steps its methanol group is converted to carboxyl. More specifically its amino group is blocked by reaction with benzoyl halide and the methanol group then oxidized to carboxyl, and the benzoyl group removed to yield the end product isomer.

1-4-dimethyl-cyclohexane dicarboxylate melting at 69–71° C., another such cyclohexane starting material, is hydrolyzed to its mono-ester which with thionyl halide is converted to the halide of the half-ester, which latter reacted with ammonia gives the corresponding ester amide. The latter is heated with thionyl halide and converted to methyl 4-cyano-cyclohexane carboxylate which then is hydrolyzed to yield 4-cyano-cyclohexane carboxylic acid which catalytically reduced using a compatible reduction catalyst such as Raney nickel is converted to the 4-aminomethyl-cyclohexane carboxylic acid end product.

3,574,722

CARBOXYLATION OF AROMATIC COMPOUNDS

James J. Louvar, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 20, 1968, Ser. No. 714,430

Int. Cl. C07c *63/04, 101/54*

U.S. Cl. 260—515 **10 Claims**

Aromatic compounds may be carboxylated by treating the compound with a solution of boron trifluoride in a carboxylic acid to form carboxylated aromatic compounds.

3,574,723

CARBOXYLATION OF AROMATIC ACTING COMPOUNDS

James J. Louvar, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 20, 1968, Ser. No. 714,443

Int. Cl. C07c *63/04, 101/54, 101/56*

U.S. Cl. 260—515 **10 Claims**

Aromatic acting compounds may be carboxylated by treating the compound with a carboxylic acid in the presence of a catalyst comprising a phosphorus-containing acid, a mineral acid or a Friedel-Crafts metal halide to form the desired carboxylated compounds.

3,574,724

NITROBENZYL SULFUR ACIDS AND PREPARATION THEREOF

Wilhelm Wenner, Upper Montclair, and Milan Radoje Uskokovic, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Mar. 21, 1966, Ser. No. 535,722, which is a continuation-in-part of application Ser. No. 445,264, Apr. 2, 1965, which in turn is a continuation-in-part of application Ser. No. 266,030, Mar. 18, 1963. Divided and this application May 10, 1968, Ser. No. 738,759

Int. Cl. C07c *79/46, 149/30*

U.S. Cl. 260—515 **6 Claims**

Nitrobenzyl sulfur containing organic acids are intermediates in the preparation of pharmaceutically active 4,1-benzothiazepin-2(1H)-ones and 4,1-benzothiazepines having a basic side chain on the 1 nitrogen atom.

3,574,725

METHOD FOR PREPARING L-(—)-α-METHYL-β-(3,4-DIHYDROXYPHENYL)-ALANINE

Toshinori Kurano, Kanagawa-ken, and Mitsukazu Fukuda and Masahide Horiuchi, Tokyo, Japan, assignors to Sankyo Chemical Industries Ltd.

No Drawing. Filed Mar. 27, 1967, Ser. No. 625,967

Claims priority, application Japan, Aug. 11, 1966, 41/52,736; Feb. 21, 1967, 42/11,016

Int. Cl. C07c *101/08*

U.S. Cl. 260—519 **6 Claims**

A process for obtaining substantially pure L-(—)-α-methyl-β-(3,4-dihydroxyphenyl)-alanine which comprises

seeding a saturated solution of DL-N-acyl-α-methyl-β-(3, 4-methylenedioxyphenyl)-alanine with L-N-acyl-α-methyl-β-(3,4-methylenedioxyphenyl)-alanine to initiate crystallization thereof from said solution, recovering the crystallized laevo compound and deacylating and dealkylating the recovered, crystallized compound by hydrolysis in the presence of a phenol.

3,574,726

ESTER-ETHER INTERCHANGE REACTIONS

Walter Theodore Dent, Norton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 21, 1966, Ser. No. 595,594
Claims priority, application Great Britain, Nov. 24, 1965, 49,943/65
Int. Cl. C07c *65/06, 65/14*
U.S. Cl. 260—520 **9 Claims**

A potassium salt of an ether of a para-hydroxy benzoic acid is produced by heating a potassium salt of an ester of an alcohol and para-hydroxy benzoic acid.

3,574,727

PURIFICATION OF TEREPHTHALIC ACID

Wallace E. Taylor and Enrique R. Witt, Corpus Christi, Tex., and Kwang Yuen Zee-Cheng, Kansas City, Mo., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Oct. 16, 1967, Ser. No. 675,289
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 **9 Claims**

A process for purifying crude terephthalic acid by dissolving the terephthalic acid in acetic anhydride and adding peracetic acid to oxidize at least one of the impurities present in solution.

3,574,728

PROCESS FOR PRODUCING SORBIC ACID

Itaru Takasu, Masaru Higuchi, and Yoshito Hijioka, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed Nov. 17, 1967, Ser. No. 683,786
Int. Cl. C07c *7/10*
U.S. Cl. 260—526 **8 Claims**

A process for producing crotonaldehyde ketone addition compounds adapted for the production of sorbic acids and its salts which comprises reacting ketene with crotonaldehyde in the presence of a bivalent metal complex of acetylacetone in which the metal is a member selected from the group consisting of zinc, cadmium and manganese, said complex having no other group which inhibits the reaction of ketene and crotonaldehyde.

3,574,729

PRODUCTION OF UNSATURATED ALIPHATIC ACIDS

Edward James Gasson, Kingswood, England, assignor to The Distillers Company Limited, Edinburgh, Scotland

No Drawing. Filed Oct. 25, 1966, Ser. No. 589,245
Claims priority, application Great Britain, Nov. 10, 1965, 47,796/65
Int. Cl. C07c *57/04*
U.S. Cl. 260—530 **10 Claims**

The production of acrylic and methacrylic acid by reacting acrolein and methacrolein, respectively, with oxygen at elevated temperatures in the presence of a primary oxide composition of antimony, molybdenum and vanadium with an additional oxide of an element of the group consisting of tin, nickel, chromium and titanium, said composition less molybdenum, having been heated in the presence of oxygen at 700 to 900° C. followed by the addition of molybdenum and heating at 500 to 900° C. in the presence of oxygen.

3,574,730

PRODUCTION OF ACETIC ACID

Clifford William Capp, Ewell, and Brian Walton Harris, Horley, England, assignors to BP Chemicals (U.K.) Limited, London, England

No Drawing. Filed Nov. 28, 1967, Ser. No. 686,283
Claims priority, application Great Britain, Dec. 20, 1966, 56,912/66
Int. Cl. C07c *53/08*
U.S. Cl. 260—533 **10 Claims**

In a process for the production of acetic acid from ethylene, wastage of ethylene due to combustion to carbon oxides is obviated by use of a palladium metal/transition metal oxide or salt catalyst.

3,574,731

PROCESS FOR RECOVERING ALKYL CARBOXYLIC ACIDS

Roby Bearden, Jr., Baton Rouge, La., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 525,292, Feb. 7, 1966. This application Nov. 19, 1968, Ser. No. 777,195
Int. Cl. C07c *51/26, 51/32*
U.S. Cl. 260—533 **10 Claims**

This invention relates to the recovery of C_6 through C_{30} alkyl carboxylic acids from a mixture of oxidation products which are formed by the reaction of an olefin with carbon monoxide and hydrogen in the presence of an oxonatic ı catalyst, i.e., cobalt, and thereafter oxidizing the oxonation product mixture with molecular oxygen to form the oxidation product mixture. The oxidation product mixture, containing carboxylic acids, oxides of said oxonation catalysts and oxidation by-products is reacted in a first stage with sulfur-dioxide in the presence of water to convert the oxides of said oxonation catalyst to water-soluble catalyst sulfates dissolved in an aqueous phase. Thereafter, the aqueous phase formed in the first stage is separated from the non-aqueous phase containing the carboxylic acids and the oxidation by-products, and the latter reacted with a dilute aqueous alkali, whereby the carboxylic acids are recovered as an aqueous solution of alkali carboxylates and the oxidation by-products separate as an alkali-insoluble phase.

3,574,732

WITHDRAWN

3,574,733

2-(HEXAFLUORO - 2 - HYDROXY-2-PROPYL)-ALKANOIC ACIDS AND PROCESS FOR PREPARING THEM

Everett E. Gilbert, Morristown, and James O. Peterson, Convent Station, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1968, Ser. No. 772,050
Int. Cl. C07c *59/04, 65/02*
U.S. Cl. 260—535 **9 Claims**

Reaction products of hexafluoroacetone and monocarboxylic or dicarboxylic alkanoic acids, useful as surface tension reducing agents, and their preparation by heating a mixture of hexafluoroacetone and the alkanoic acid at a temperature of at least about 150° C.

3,574,734

HYDROGENATION OF UNSATURATED CARBOXYLIC ACIDS

Geoffrey Colin Bond, London, England, assignor to Johnson, Matthey & Co. Limited, London, England

No Drawing. Filed July 7, 1967, Ser. No. 651,711
Claims priority, application Great Britain, July 12, 1966, 31,310/66
Int. Cl. C07c *51/36, 55/10*
U.S. Cl. 260—537 **9 Claims**

Unsaturated carboxylic acids are hydrogenated in the presence of a water-soluble amino compound of rhodium.

3,574,735

PROCESS FOR THE MANUFACTURE OF UNSATURATED PHOSPHONIC ACID DICHLORIDES

Kurt Sennewald, Knapsack, near Cologne, Alexander Ohorodnik, Liblar, Dieter Kirstein, Cologne-Lindenthal, and Hans-Joachim Hardel, Bruhl-Vochem, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Dec. 6, 1967, Ser. No. 688,342
Claims priority, application Germany, Dec. 23, 1966, K 61,005
Int. Cl. C07f *9/42*
U.S. Cl. 260—543 7 Claims

Production of unsaturated phosphonic acid dichlorides from halogeno-alkane phosphonic acid dichlorides containing a halogeno-alkane radical with 2 to 8 carbon atoms by thermal dehydrohalogenation and continuous distillative removal of resulting unsaturated phosphonic acid dichloride from reaction mixture, wherein the thermal dehydrohalogenation is carried out in the presence of triphenyl-phosphine as the catalyst.

3,574,736

METHOD FOR PREPARING HYDROXAMOYL CHLORIDES

Julius J. Fuchs, Forwood, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 16, 1966, Ser. No. 602,125
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 10 Claims

Chlorination of aldoximes, such as acetaldoxime, in 1% to 13% aqueous solutions and at a temperature of 25° C. to −15° C. to obtain the corresponding hydroxamoyl chlorides.

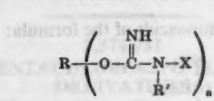
3,574,737

IMINOCARBAMIC ACID ESTER DERIVATIVES

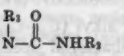
Ernst Grigat, Cologne-Stammheim, and Rolf Pütter, Dusseldorf, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 27, 1964, Ser. No. 414,412
Claims priority, application Germany, Dec. 3, 1963, F 41,454; Jan. 16, 1964, F 41,756; Apr. 28, 1964, F 42,737
Int. Cl. A01n *9/20*; C07c *119/00, 133/02*
U.S. Cl. 260—554 23 Claims

Iminocarbonic and iminocarbamic acid esters of the formula



where R and R^1 are organo radicals, X is hydroxyl, amino, substituted amino or



where R_2 and R_3 are organo radicals, and *n* is an integer of 1 to 6, which esters are useful as herbicides and fungicides.

3,574,738

PROCESS OF SYNTHESIZING UREA

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021

Filed Dec. 26, 1968, Ser. No. 787,059
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 4 Claims

Corrosion of stainless steel equipment used for the synthesis of urea from ammonia and carbon dioxide is substantially prevented by dissolving oxygen or air in the liquid ammonia feed prior to its introduction into the reactor. Urea synthesis is effected under specific reaction conditions such as operation with a specific ratio of oxygen, ammonia, and water to carbon dioxide as well as under specific temperature and pressure conditions whereby a high conversion rate is achieved and the resulting urea product is of low turbidity and low iron content.

3,574,739

ALKOXYBENZENESULFONAMIDES

Peter H. L. Wei, Upper Darby, Stanley C. Bell, Penn Valley, and Scott J. Childress, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 522,050, Jan. 21, 1966. This application Apr. 25, 1968, Ser. No. 724,247
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 7 Claims

N - (alkoxyalkylidene)alkoxybenzenesulfonamides (I) are provided by a process comprising treating an o-hydroxybenzenesulfonamide with a trialkyl orthoalkylate. Acid hydrolysis of (I) provides alkoxybenzenesulfonamides (II). Reaction of (II) with an alkyl halide provides N-(alkyl)alkoxybenzenesulfonamides (III). Compounds I, II, and III have pharmacological activity, especially as analgesics.

3,574,740

METHOD OF PREPARING METHANE SULFONAMIDE AND ITS DERIVATIVES

Le Roy Martin, Riverview, Mich., assignor to Pennwalt Corporation

No Drawing. Filed June 11, 1968, Ser. No. 735,989
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 7 Claims

Methane sulfonamide and its derivatives are prepared by reacting methane sulfonyl chloride with an amine, e.g., ammonia or a primary or secondary alkyl amine, in a nitroalkane as a reaction diluent, whereby the amine hydrochloride salt by-product precipitates and is easily separated from the sulfonamide product-nitroalkane solution at a moderately elevated temperature, such as by filtration or centrifugation. The sulfonamide product is separated from the nitroalkane by such means as crystallization, distillation, or extraction techniques.

3,574,741

SULFONAMIDOPHENALKYLAMINES

William A. Gould, deceased, late of Toronto, Ontario, Canada, by Barbara E. Gould, legal representative, and Aubrey A. Larsen, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Continuation-in-part of application Ser. No. 507,664, Nov. 15, 1965. This application Apr. 14, 1969, Ser. No. 817,272
Int. Cl. C07c *143/74, 143/78*
U.S. Cl. 260—556 14 Claims

Phenalkylamine compounds having both the hydroxyl and sulfonamido groups in the phenyl ring constitute a new class of highly active sympathomimetic agents.

3,574,742

AMINOALICYCLIC CARBOXHYDRAZIDES

Milton Lapidus, Rosemont, Norman H. Grant, Wynnewood, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 25, 1968, Ser. No. 739,624
Int. Cl. C07c *103/86*
U.S. Cl. 260—557 2 Claims

Aminoalicyclic carboxhydrazides are prepared by the reaction of an aminoalicyclic carboxylic acid anhydride with a hydrazine. The compounds have biochemical activity and are useful as immuno-suppressive agents.

3,574,743
N-ACYL DERIVATIVES OF 2-HYDROXY-PHENYLAMINES

Keith Coupland, Hull, England, assignor to Distillers Chemicals and Plastics Limited, London, England

No Drawing. Filed Mar. 10, 1967, Ser. No. 622,045
Claims priority, application Great Britain, Apr. 6, 1966, 15,385/66
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 10 Claims

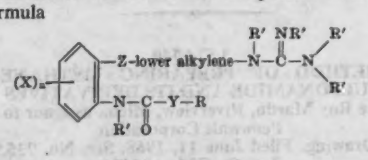
N-acyl derivatives of 2-hydroxyphenylamines are produced from the corresponding disubstituted catechols and are useful as lubricant additives.

3,574,744
GUANIDINOALKYL DERIVATIVES OF SUBSTITUTED ANILIDES

John Krapcho, Somerset, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 466,841, June 24, 1965. This application Oct. 26, 1967, Ser. No. 678,201
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 10 Claims

This invention relates to new compounds of the general formula



and to their acid addition salts and quaternary ammonium salts, compounds which have anti-serotonin activity and antimicrobial activity.

3,574,745
CHLOROPHENOXYACETAMIDE HERBICIDES AND PREPARATION THEREOF

Edwin D. Little, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 27, 1968, Ser. No. 755,747
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 7 Claims

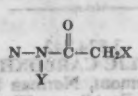
N - (2 - chloroethyl)-chlorophenoxyacetamides are prepared by condensing 2-oxazolidone with a di- or trichlorophenoxyacetyl chloride at a pH less than about 7.0. The compounds are useful as herbicides.

3,574,746
N-(CYCLOALKEN-1-YL) ALPHA-HALOACETAMIDES

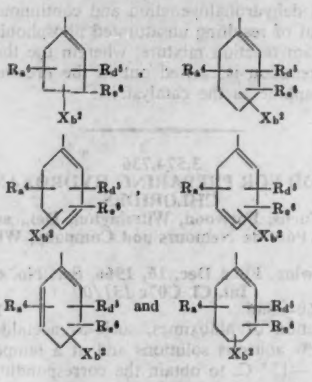
John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 523,870, Feb. 1, 1966. This application June 5, 1967, Ser. No. 644,760
Int. Cl. C07c *103/34*
U.S. Cl. 260—561 24 Claims

Compounds of the formula



wherein X is halogen (Cl, Br, F and I);
Z is selected from the group consisting of
(I) hydrogen,
(II) X_n^1R— wherein R is hydrocarbyl of not more than 18 carbon atoms selected from the group consisting of alkyl, alkenyl and alkynyl, X^1 is halogen (Cl, Br, F and I) and *n* is an integer from 0 to 3 inclusive,
(III) cycloalkyl, alkylcycloalkyl and alkoxycycloalkyl of at least 3 and not more than 8 ring carbon atoms, and not more than 12 chain carbon atoms,
(IV) $R^3O[R^2O]_mR^1$— wherein R^1 is selected from the group consisting of alkylene and alkoxyalkylene of not more than 8 carbon atoms, R^2 is alkylene of not more than 4 carbon atoms, R^3 is selected from the group consisting of alkyl and alkenyl of not more than 4 carbon atoms and *m* is an integer from 0 to 1, and
(V) aryl, aralkyl and alkaryl of not more than 18 carbon atoms; and
Y is cycloalkenyl of at least 5 and not more than 7 carbon atoms in the ring selected from the group consisting of



wherein R^4 is alkyl of not more than 4 carbon atoms, R^5 is alkoxy of not more than 4 carbon atoms, R^6 is phenyl, X^2 is halogen (Cl, Br, F and I), *a*, *b* and *d* are each integers from 0 to 3 inclusive and *e* is an integer from 0 to 1.

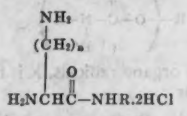
Utility as plant growth regulants.

3,574,747
AMIDES OF DIAMINOACIDS

George S. Denning, Jr., Norwich, N.Y., assignor to The Norwich Pharmacal Company

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,388
Int. Cl. C07c *103/50*
U.S. Cl. 260—561 12 Claims

New amides of diaminoacids of the formula:



wherein R is a higher alkyl (C_{12}–C_{18}) group and *n* is 2–4 possess a broad antibacterial spectrum for topical application.

3,574,748
β-ALKOXY-ACRYLIC ACID AMIDES

Dietmar Mayer, Leverkusen, Klaus Sasse, Cologne-Stammheim, and Ingeborg Hammann, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 24, 1969, Ser. No. 810,024
Claims priority, application Germany, Mar. 25, 1968, P 17 68 041.0
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 10 Claims

β-Alkoxy-acrylic acid amides, i.e. β-(alkoxy, cycloalkoxy, alkyl-cycloalkoxy and alkyl-cycloalkyl-alkoxy) acrylic acid N-(alkyl, alkenyl, cycloalkyl, alkyl-cycloalkyl, phenyl-alkyl and chloro-phenyl-alkyl)-N-(unsubstituted and optionally alkyl, alkenyl, cycloalkyl and phenyl-

alkyl)-amides, which possess pesticidal, especially insecticidal and acaricidal, properties and which may be produced by reacting the corresponding β-alkoxy-acrylic acid chloride with the appropriate amine.

3,574,749

1-(4-AMIDOPHENOXY)-3-AMINO-2-PROPANOL DERIVATIVES

Ralph Howe and Leslie Harold Smith, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 23, 1967, Ser. No. 677,027
Claims priority, application Great Britain, Nov. 3, 1966, 49,369/66
Int. Cl. C07c *103/30*
U.S. Cl. 260—562 4 Claims

The disclosure relates to 1-acylamino-3-amino-2-propanol derivatives, processes for their manufacture and pharmaceutical compositions containing them. The said compounds possess β-adrenergic blocking activity and are useful in the treatment of heart diseases. Representative of the compounds disclosed is 1-(2-allyloxy-4-propionamidophenoxy)-3-isopropylamino-2-propanol.

3,574,750

PROCESS FOR THE PRODUCTION OF CYCLOHEXANONE OXIME

Eizo Yasui, Takeo Kawaguchi, and Takashi Matsubara, Nagoya-shi, Japan, assignors to Toa Gosei Chemical Industry Co. Ltd., Tokyo, Japan

No Drawing. Filed Feb. 27, 1967, Ser. No. 619,027
Claims priority, application Japan, Feb. 26, 1966, 41/11,322
Int. Cl. C07c *131/04*
U.S. Cl. 260—566 5 Claims

A process for producing cyclohexanone oxime by the oxidation of cyclohexanone in the presence of ammonia and hydrogen peroxide using as a catalyst tungstic acid, isopolytungstic acid, heteropolytungstic acid, or a salt thereof. The oxidation is conducted in the presence of a sulfate, preferably at normal pressure and at a temperature of from 5–50° C. using water as the medium to promote the reaction. The yield of cyclohexanone oxime is about 95%.

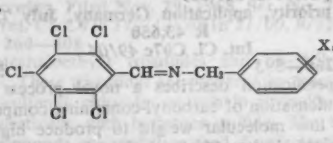
3,574,751

2,3,4,5,6-PENTACHLOROBENZYLIDENAMINE DERIVATIVES

Toshiaki Ozaki and Sigeo Yamamoto, Toyonaka-shi, Toshiyuki Wakatsuki, Kyoto, Akira Fujinami, Takarazuka-shi, Katsuji Nodera, Nishinomiya-shi, and Yoshihiko Nishizawa, Nara-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,235
Claims priority, application Japan, Jan. 17, 1967, 42/3,529
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 8 Claims

2,3,4,5,6-pentachlorobenzylidenamine derivatives as novel agricultural fungicides, particularly chemicals suitable for control of rice blast, which have the structural formula,



wherein X is a hydrogen atom, a lower alkyl group, a halogen atom or a nitro group and *n* is 1 or 2.

3,574,752

5-(2-ALKYLAMINOETHYLIDENE)-10,11-DIHYDRO- AND- 5H-DIBENZO[a,d]CYCLOHEPTENES AND THE SALTS THEREOF

Edward L. Engelhardt, Gwynedd Valley, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Aug. 21, 1967, Ser. No. 661,783
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.8 7 Claims

This application relates to secondary aminoethylidene derivatives of 5H-dibenzo[a,d]cycloheptenes and the corresponding 10,11-dihydro derivatives. The compounds of this invention are useful as antiarrhythmic agents as well as local anesthetic agents. They are prepared by reaction of a selected 5-(2-bromoethylidene)-5H-dibenzo[a,d]cycloheptene or the corresponding 10,11-dihydro derivative with a primary amine such as methylamine, ethylamine, and the like, to form the product directly.

3,574,753

PREPARATION OF ALLYL DIFLUOROAMINE

Richard P. Rhodes, Newark, and Anthony J. Passannante, Metuchen, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 11, 1960, Ser. No. 28,494
Int. Cl. C07c *85/00, 87/26*
U.S. Cl. 260—583 1 Claim

Allyl difluoroamine is selectively prepared by reacting propylene with tetrafluorohydrazine in the gas phase at elevated temperatures, preferably at a temperature in the range of from about 250° to about 380° C. The allyl difluoroamine compounds prepared in accordance with the instant process are excellent oxidizing agents for fuels used in rocket propellants.

3,574,754

CONTINUOUS PROCESS FOR PRODUCTION OF PRIMARY AMINES

Gerald A. Specken, % Chemcell, Ltd., P.O. Box 99, Edmonton, Alberta, Canada

Filed Nov. 15, 1967, Ser. No. 683,361
Int. Cl. C07c *85/12*
U.S. Cl. 260—583 7 Claims

A process for the hydrogenation of nitriles for obtaining high yield of primary amines where only a fraction of the hydrogen is deliverd at a time. The hydrogen is fed as continuous flows. Each flow is introduced along the reaction zone generally at regular intervals.

3,574,755

HIGH PURITY OLEFIN OXIDE ADDUCTS OF ALKYL AND ALKENYL AMINES

Robert B. McConnell and Robert A. Swenson, Janesville, Wis., assignors to Northern Petrochemical Company, Omaha, Nebr.

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,464
Int. Cl. C07c *91/12*
U.S. Cl. 260—584 11 Claims

Disclosed are olefin oxide adducts of alkyl and alkenyl primary amines and olefin oxide adducts of alkyl and alkenyl trimethylene diamines. The amine is first reacted with about one to three moles of an olefin oxide containing at least three carbons to form an intermediate which is then reacted with ethylene oxide to form the desired products. The products are surface active agents characterized by light color and low amounts of nonamine impurities.

3,574,756
METHOD OF PREPARING ORGANIC NITRO COMPOUNDS

Desmond Sheehan, 13a Wakefield St., Hamden, Conn. 06517, and Anthony F. Vellturo, 977 Ott Drive, Cheshire, Conn. 06410

No Drawing. Continuation-in-part of application Ser. No. 585,258, Oct. 10, 1966. This application Aug. 15, 1967, Ser. No. 664,232

Int. Cl. C07c *45/18, 49/26, 79/46*

U.S. Cl. 260—586 6 Claims

A method of preparing cyclic nitroketones which comprises gradually adding acetyl nitrate to the enol acetate of the unnitrated cyclic ketone, whereby the amount of acetyl nitrate is kept at less than excess, based on the enol acetate of the ketone, in the reaction mixture over substantially the time required for the reaction to occur.

3,574,757
PROCESS FOR THE PREPARATION OF CYCLOHEXANONE

Richard E. Collier, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 452,381, Apr. 30, 1965. This application Nov. 22, 1967, Ser. No. 684,947

Int. Cl. C07c *45/00*

U.S. Cl. 260—586 8 Claims

More specifically, the invention relates to improving yields of cyclohexanone while reducing undesirable by-product formation in the production of cyclohexanone by hydrolytic cleavage of a bicyclic unsaturated ketone which can be 2-cyclohexylidenecyclohexanone or 2(1-cyclohexen-1-yl) cyclohexanone in the presence of caustic alkali, said improvement being effected by employing superheated steam and commencing the reaction with little or no water present in the starting mixture of bicyclic ketone and caustic alkali.

3,574,758
POLYNITROBENZOPHENONE

Kathryn G. Shipp, 9507 Bruce Drive 20901, and Lloyd A. Kaplan, 13609 Colefair Drive 20904, both of Silver Spring, Md.

No Drawing. Filed May 29, 1967, Ser. No. 644,434

Int. Cl. C07c *49/76, 49/80*

U.S. Cl. 260—591 16 Claims

A polynitro-benzophenone having at least 4 nitro substituents and useful as a high energy explosive composition. A polynitro-diphenylmethane intermediate which may be oxidized to provide the aforesaid benzophenones. A process for preparing the aforesaid intermediate and the process for oxidizing the aforesaid intermediate to the benzophenone.

3,574,759
PERFLUORODICYANAMIDE AND METHOD

Simon Frank and Marion Douglas Meyers, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 11, 1962, Ser. No. 195,020

Int. Cl. C07c *87/22*

U.S. Cl. 260—583 10 Claims

1. Perfluorodicyanamide.

2. The method of preparing fluorinated compounds including perfluorodicyanamide which comprises contacting finely divided zinc dicyanamide with a mixture of gaseous fluorine and an inert carrier gas, said zinc dicyanamide being at a temperature within the range of from about 0° C. to about 70° C.; and collecting the reaction products including perfluorodicyanamide.

3,574,760
PROCESS FOR THE PREPARATION OF AMINES

Ichiro Sasaki and Shoichi Nishizaki, Kyoto, Japan, assignors to Dai-ichi Kogyo Seiyaku Kabushiki Kaisha, Kyoto, Japan

No Drawing. Filed Aug. 2, 1968, Ser. No. 749,570

Claims priority, application Japan, Aug. 3, 1967, 42/49,879

Int. Cl. B01j *11/78*; C07c *85/00*

U.S. Cl. 260—583 13 Claims

A process for preparing an aliphatic amine which comprises the steps of reacting an olefine having at least 4 carbon atoms which hydrocyanic acid in the presence of an acid catalyst consisting of sulfuric acid, water, and boron trifluoride, and thereafter hydrolyzing the resulting reaction product with an acid or alkali.

3,574,761
STEREO-SPECIFIC HYDROGENATION PROCESS FOR THE PREPARATION OF 9β,10β-DES A-ANDROST-5-ONES AND 9β,10β-DES A-PREGNAN-5-ONES

Milan Radoje Uskokovic, Montclair, and Thomas Henry Williams, Passaic, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107. This application Oct. 20, 1965, Ser. No. 499,094

Int. Cl. C07c *49/30*

U.S. Cl. 260—586 10 Claims

A process for converting Δ^9-5-keto-desA-steroids into 9β,10β - desA - steroids by catalytic hydrogenation, said 9β,10β-desA-steroids being intermediates for 9β,10α-steroids having anabolic, anti-androgenic and progestational properties.

3,574,762
PROCESS FOR PREPARING NAPHTHALENONES

Wataru Nagata, Nishinomiya-shi, Hyogo, Tadao Terasawa, Takatsuki-shi, Osaka, and Tsutomu Sugasawa, Kobe-shi, Hyogo, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed July 7, 1967, Ser. No. 651,699

Claims priority, application Japan, July 9, 1966, 41/45,016

Int. Cl. C07c *49/76, 49/80, 149/82*

U.S. Cl. 260—590 7 Claims

Process for the preparation of naphthalene derivatives, useful as intermediates in the preparation of phenanthrene derivatives having a potent antiandrogenic activity, and of steriod hormone, which is characterized by the epoxidation of a substituted or not substituted dihydronaphthalene derivative with an organic peracid in the reaction medium containing a lower alkanol and the subsequent elimination of an alcohol yielding a corresponding 2-tetralone derivative.

3,574,763
PRODUCTION OF SATURATED CARBONYL COMPOUNDS

Johannes Wollner, 5 Nordstrasse, Kapellen Kreis Moers, Germany, and Wilhelm Neier, 29 Schillerstrasse, Homberg, Niederrhein, Germany

No Drawing. Continuation of application Ser. No. 651,396, July 6, 1967. This application July 25, 1969, Ser. No. 849,569

Claims priority, application Germany, July 7, 1966, R 43,650

Int. Cl. C07c *49/04*

U.S. Cl. 260—593 5 Claims

This specification describes a novel process for the Aldol condensation of carbonyl-containing compounds of relatively low molecular weight to produce higher molecular weight α-β unsaturated carbonyl compounds which are hydrogenated to saturated carbonyl compounds as they are produced. There is described a novel catalyst

for this reaction which is a strongly acid cation exchange resin having metallic reduced noble metal deposited thereon. The process is carried out using a solid bed catalyst in a trickle phase. Particularly exemplified is the production of methyl isobutyl ketone by the self-condensation of acetone.

3,574,764

PROCESS FOR PRODUCING SATURATED ALIPHATIC ALDEHYDES

Xaver Gregory and Franz Büttner, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Feb. 15, 1965, Ser. No. 432,809
Claims priority, application Germany, Mar. 7, 1964, W 36,340
Int. Cl. C07c *45/20*
U.S. Cl. 260—601 3 Claims

In the process of the invention hydrogen and an unsaturated aliphatic aldehyde are passed in the vapor phase in contact with a catalyst, the said catalyst consisting essentially of nickel and a substance selected from the group consisting of elementary sulphur, sulfidic additives and sulphur compounds which are reducible under the conditions of the reaction, the sulphur content of said catalyst being 5–30% by weight referred to the metallic nickel in the catalyst.

3,574,765

PROCESS FOR DECOLORIZATION OF GLYOXAL

William C. Kuryla, St. Albans, and Jack Jackson, Charleston, W. Va., assignors to Union Carbide Corporation

No Drawing. Filed Aug. 30, 1968, Ser. No. 756,380
Int. Cl. C07c *45/24*
U.S. Cl. 260—601 7 Claims

A process for reducing color from colored glyoxal solution which comprises contacting colored glyoxal solution with ozone in an amount and for a time sufficient to reduce the color of said glyoxal solution.

3,574,766

PROCESS FOR THE PRODUCTION OF β-METHYLMERCAPTOPROPIONALDEHYDE

Gerhard Meyer, Obernburg (Main), and Helmut Magerlein and Hans-Dieter Rupp, Erlenbach, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,946
Claims priority, application Germany, Oct. 13, 1967, P 16 68 139.3
Int. Cl. C07c *45/00*
U.S. Cl. 260—601 7 Claims

Process for producing β-methylmercaptopropionaldehyde in high yields by reacting acrolein with methylmercaptan in the presence of the catalyst

$$R_3XY$$

where each R is a monovalent organic radical, X is phosphorous, arsenic or antimony and Y is oxygen or sulfur.

3,574,767

BIS-(POLYHALOVINYL OR POLYHALOETHYL) TRISULFIDES

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Nov. 29, 1968, Ser. No. 780,292
Int. Cl. C07c *149/12*; A01n *21/00, 9/12*
U.S. Cl. 260—608 5 Claims

Bis-(tetrahaloethyl) trisulfides and bis-(trihalovinyl) trisulfides. These trisulfides are prepared by reacting tetrahaloethylsulfenyl chloride or trihalovinylsulfenyl chloride, respectively, with hydrogen sulfide. The tetrahaloethyl compounds are useful as seed disinfectants; whereas the trihalovinyl materials are algicidal.

3,574,768

SYNTHESIS OF BETA-MERCAPTOETHANOL

Harold W. Tompkins, Phillips, Tex., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,288
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 7 Claims

Ethylene oxide and hydrogen sulfide are reacted in liquid phase to produce monothioglycol $HSCH_2CH_2OH$ (2-mercaptoethanol). Liquid phase retention of product catalyzes the reaction. The liquid phase with a large excess of H_2S permits good temperature control. Sufficient large excess of the H_2S over the ethylene oxide is used to control the temperature of the exothermic reaction by vaporizing the liquid excess H_2S. High yields of high purity product of the order of substantially in the range of 90 plus percent, e.g., 95 plus percent, is realized. The molecular ratio of H_2S to the oxide is broadly 5–15, and more preferably in the range 7–13. Low temperatures of the order of about 125–300° F., preferably of the order of about 130–260° F. are possible to be employed under conditions of operation. Preferably, a catalyst such as an activated alumina catalyst is used. Purities of 99.2 weight percent have been obtained.

3,574,769

2-LOWERALKOXY-4-NITRO BENZYLALCOHOLS

Robert L. Clark, Woodbridge, and Edward F. Rogers, Middletown, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Dec. 31, 1964, Ser. No. 422,536, now Patent No. 3,520,930, dated July 21, 1970. Divided and this application Dec. 12, 1968, Ser. No. 810,873
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 2 Claims

Anticoccidal 2-alkoxy-4-nitro (amino, alkylamino or arylamino)-benzylamines and benzylalcohols are prepared by selective reduction techniques from the corresponding 2-loweralkoxy-4-nitrobenzoic acid or 2-loweralkoxy-4-nitro benzonitrile. It is contemplated that dosage units of these active coccidiostats will be administered orally in the prevention and control of coccidiosis in poultry.

3,574,770

HYDROXY TERMINATED PERFLUORO ETHERS

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of Eugene C. Stump, Jr., and Stephen Eugene Rochow, Gainesville, Fla.

No Drawing. Filed Oct. 24, 1968, Ser. No. 770,398
Int. Cl. C07c *43/00*
U.S. Cl. 260—615 2 Claims

Hydroxy terminated perfluoro ethers and polyurethane resins incorporating the structure

$$—CH_2CF(CF_3)[OCF_2CF(CF_3)]_mO(CF_2)_pO[CF(CF_3)CF_2O]_nCF(CF_3)CH_2—$$

where

p is an integer of 2 to 12, and
m and *n* are integers whose sum is from 0 to 20.

3,574,771

BIS-(FLUOROALKOXY)ALKYL SILANES AND POLYMERS THEREOF

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application Apr. 17, 1968, Ser. No. 736,882, now Patent No. 3,484,470, dated Dec. 16, 1969, which is a division of application Ser. No. 623,527, Mar. 16, 1967, now Patent No. 3,420,793. Divided and this application Nov. 25, 1968, Ser. No. 791,833
Int. Cl. C07c *41/04*
U.S. Cl. 260—615 2 Claims

The adduct of hexafluoroacetone and an alkali metal fluoride, e.g., $(CF_3)_2CF—OR$, is reacted with a 1,4-dihalo-

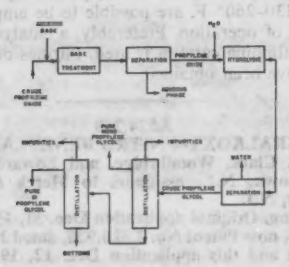
2-butene to replace the halo groups with perfluoroisopropoxy groups. A silane containing H bonded to Si—for example $HSiCl_3$—is then added across the double bond of the intermediate, producing bis-(perfluoroisopropoxy)alkyl silane derivatives which are useful, in both monomeric and polymeric form, for imparting a high degree of water- and oil-repellency to fibrous substrates, e.g., fabrics made from natural or synthetic fibers.

3,574,772

PREPARATION OF PURE MONO- AND DIPROPYLENE GLYCOL BY PLURAL STAGE DISTILLATION WITH SIDE STREAM RECOVERY

Mitchell Becker, Teaneck, and Jack B. Feder, Dumont, N.J., assignors to Halcon International, Inc.

Filed Oct. 25, 1968, Ser. No. 770,568
Int. Cl. C07c *29/24*
U.S. Cl. 260—637 6 Claims



This invention relates to a process for preparing propylene glycol which meets both U.S.P. and Food Grade standards. The process comprises treating a crude propylene oxide with an aqueous base, phase separating, hydrolyzing the separated propylene oxide fraction to form propylene glycol and passing said propylene glycol into a distillation zone, fractionally distilling the propylene glycol, separating pure mono propylene glycol as a liquid stream at an intermediate point in said zone from impurities which boil higher and lower than the propylene glycol.

3,574,773

PRODUCTION OF ALK-3-EN-1-OLS

Herbert Mueller, Frankenthal, Pfalz, and Hermann Overwien and Horst Pommer, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 15, 1968, Ser. No. 705,628
Claims priority, application Germany, Feb. 25, 1967, P 12 79 014.6, P 12 75 049.1-42, P 16 18 098.6; Dec. 30, 1967, P 16 43 729.9
Int. Cl. C07c *1/24, 33/02*
U.S. Cl. 260—638 6 Claims

The production of alk-3-en-1-ols by reaction of olefins which contain at least one hydrogen atom on at least one of the carbon atoms adjacent to the carbon atoms of the double bond with an aldehyde at from 235° to 400° C.

3,574,774

FLUOROBROMOCYCLOPENTENES CONTAINING 4 TO 7 BROMINE ATOMS

Richard Garth Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,122
Int. Cl. C07c *23/08, 17/20*
U.S. Cl. 260—648 4 Claims

New compounds are provided in the form of fluorobromocyclopentenes characterized by the formula:

$$C_5F_xBr_z$$

wherein x is an integer from 1 to 7, z is an integer from 1 to 7 and $x+z=8$. The componunds are prepared by fluorinating hexabromocyclopentadiene with antimony trifluoride.

3,574,775

FLUORINATION OF PERHALO COMPOUNDS

George Fuller, Somerset, England, assignor to Imperial Smelting Corporation (N.S.C.) Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 553,711, May 31, 1966, which is a continuation-in-part of application Ser. No. 278,422, May 6, 1963. This application Apr. 22, 1968, Ser. No. 723,290
Int. Cl. C07c *25/04*
U.S. Cl. 260—650 4 Claims

Use of the solvent sulpholane (otherwise known as tetrahydrothiophen 1,1-dioxide or tetramethylene sulfone) in a halogen exchange reaction between a chlorinated benzene fully substituted with halogen atoms and a dry alkali metal fluoride enables one to produce fluorinated benzenes fully substituted with halogen atoms more than three of which are fluorine atoms, e.g. chloropentafluorobenzene and hexafluorobenzene.

3,574,776

GASEOUS PHASE PROCESS FOR FLUORINATION OF ALIPHATIC CHLOROHYDROCARBONS

Julius Fülöp, Weiher, Bruchsal, Germany, assignor to Wasagchemie G.m.b.H., Munich, Germany

No Drawing. Filed Mar. 22, 1968, Ser. No. 715,192
Claims priority, application Germany, Apr. 8, 1967, W 43,725
Int. Cl. C07c *17/20, 19/08, 21/18*
U.S. Cl. 260—653.3 7 Claims

A process for the fluorination of aliphatic chlorinated hydrocarbons which comprises the steps of reacting a gaseous phase of an aliphatic chlorinated hydrocarbon having from 1 to 6 carbon atoms under atmospheric pressure with an alkali metal fluoro-silicate at a temperature between about 250° C. and 400° C. in the presence of from about 1% to 5% by weight, based on said sodium fluoro-silicate, of a catalyst selected from the group consisting of iron oxide, iron oxide hydrates, aluminum oxides, aluminum oxide hydrates, silicon oxides, silicon oxide hydrates, mixtures thereof, mixtures thereof with aluminum chlorides and mixtures thereof with iron chlorides.

3,574,777

INTRODUCTION OF ORGANIC GROUPS INTO ETHYLENICALLY UNSATURATED HYDROCARBONS USING A GROUP VIII METAL SALT

Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated

No Drawing. Original application Aug. 13, 1965, Ser. No. 479,665. Divided and this application Dec. 8, 1969, Ser. No. 883,352
Int. Cl. C07c *15/02, 15/20*
U.S. Cl. 260—668 14 Claims

The process involves the introduction of an organic group into an ethylenically unsaturated hydrocarbon. As an example, a mixture of diphenylmercury, lithium palladium chloride and ethylene is formed in acetonitrile as a solvent. This results in the formation of an unstable adduct between the ethylene an phenyl-palladium chloride. Decomposition of the adduct by maintaining it above its decomposition temperature provides styrene as the product.

3,574,778

PROCESS FOR SEPARATION OF META-PARA-XYLENE ISOMERS FROM THEIR MIXTURE

Charanjit Rai, Somerset, and Mohamed M. Elmogazi, Hightstown, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,214
Int. Cl. C07c 7/14
U.S. Cl. 260—674 12 Claims

In the separation of para-xylene from mixtures consisting predominantly of meta- and para-xylene isomers by fractional crystallization, small amounts of gaseous eutectic inhibitors are dissolved in the xylene mixture to lower the eutectic point of the mixture and improve recovery of para-xylene therefrom, The amount of gas dissolved in the xylene mixture is between about 0.01 and about 4.0 mole percent and is preferably in the range between about 0.3 and about 1.0 mole percent.

3,574,779

SYNTHESIS OF PARAFFINIC HYDROCARBONS

George R. Lester, Park Ridge, and Cecelia J. Louvar, Evanston, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 531,057, Mar. 2, 1966. This application Dec. 6, 1968, Ser. No. 781,982
Int. Cl. C07c 9/00
U.S. Cl. 260—676 11 Claims

Olefinic hydrocarbons, and particularly normal olefinic hydrocarbons, are converted to paraffinic hydrocarbons containing one carbon atom less and one carbon atom more than the olefinic hydrocarbon by disproportionation of the latter in the presence of hydrogen and a metal oxide catalyst such as molybdenum and cobalt oxides on alumina which have been pretreated with oxygen prior to use thereof as a catalyst.

3,574,780

METHOD FOR PRODUCING ISOPRENE

Yoshihiro Watanabe, Kobe, Jiro Kobayashi, Takatsuki-shi, Yoshiki Toyoshima, Niihama-shi, and Masatosi Saito, Ichihara-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,726
Int. Cl. C07c 1/20; B01l 11/06
U.S. Cl. 260—681 5 Claims

Isoprene is produced by contacting at an elevated temperature a gaseous mixture containing tert-butyl methyl ether and oxygen with a suitable catalyst containing, as at least one component, a compound comprising oxygen and one or more members selected from the group consisting of molybdenum, vanadium, tungsten and uranium.

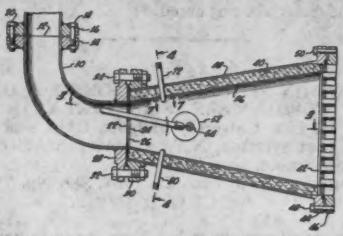
3,574,781

TRANSITION SECTION FOR ETHYLENE PRODUCTION UNIT

William J. Racine, Los Alamitos, Thomas W. Kunkel, Long Beach, James H. Caldwell, Jr., Manhattan Beach, and Edward T. Tregilgas, Jr., Palos Verdes Estates, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Feb. 14, 1968, Ser. No. 709,528
Int. Cl. C07c 3/08; C10g 9/16, 9/18
U.S. Cl. 260—683 10 Claims

A transition section for expanding coke-forming hydrocarbon gases from an ethylene cracker prior to passage of such gases through a heat exchanger for preventing the formation of coke in the transition unit including a frusto conical expansion section of critical angular dimension and including steam injection conduits for



forming a steam sheath adjacent the walls of the expansion section for preventing coke formation is disclosed.

3,574,782

PROCESS FOR PRODUCING LINEAR ALPHA OLEFINS

Roby Bearden, Jr., Baton Rouge, and Neville L. Cull, Baker, La., assignors to Esso Research and Engineering Company

No Drawing. Filed Oct. 16, 1967, Ser. No. 675,335
Int. Cl. C07c 3/18
U.S. Cl. 260—683.15 7 Claims

A process for preparing linear alpha olefins having an average molecular weight ranging from about 70 to about 300 by polymerizing an ethylene containing gas in the presence of a homogeneous catalyst formed upon reacting a transition metal halide selected from the group consisting of TiX_4, TiX_3OR' and TiX_3OOCR' wherein X is selected from the group consisting of chlorine and bromine and R′ is selected from the group consisting of alkyl, allyl, aralkyl and cycloalkyl with an aluminum alkyl halide compound characterized by the formula AlR_nX_{3-n} wherein R is selected from the group consisting of alkyl, aralkyl and cycloalkyl, X is selected from the group consisting of chlorine, bromine and iodine and n is less than 2, along with from 5% to about 50 mol percent based on the moles of transition metal halide present in the catalytic mixture of a modifier characterized by the formula

$$R''-\underset{\displaystyle R}{\overset{}{P}}-R'$$

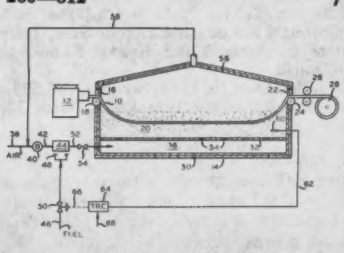
wherein P is phosphorus and R, R′ and R″ being the same or different are selected from the group consisting of hydrogen, alkyl, cycloalkyl and alkoxy containing from 1 to 20 carbon atoms, in the presence of a polar diluent selected from the group consisting of aromatic, halogenated aromatic and halogenated aliphatic compounds at a temperature below 75° C. at a pressure sufficient to liquefy the ethylene.

3,574,783

CONTINUOUS HEAT-CURING OF MATERIALS

Agmund K. Thorsrud, Madrid, Spain, assignor to Phillips Petroleum Company

Filed Mar. 30, 1967, Ser. No. 627,185
Int. Cl. C08c 17/28
U.S. Cl. 260—812 7 Claims



A method for the continuous heat-curing of materials by passing same through a fluidized, heated layer of small

particles of fluorocarbon resins; the apparent density of the fluidized particles being equal to or less than the density of the material being cured.

3,574,784

CARBON-NITROGEN BACKBONE BLOCK COPOLYMERS AS ANTISOILANTS

Morton H. Litt, University Heights, Ohio, and Jack L. Herz, East Syracuse, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 28, 1968, Ser. No. 716,979
Int. Cl. C08g *41/04*
U.S. Cl. 260—823 12 Claims

Block copolymers prepared from 2-substituted-Δ^2-oxazolines and 2-substituted-5,6-dihydro-4H-1,3-oxazines are excellent antisoilants for a wide variety of substrate materials. These block copolymers are prepared by first homopolymerizing either oxazine or oxazoline monomer; then the other monomer is added to the first-formed base polymer. The second monomer will add on to the end of the first-formed based polymer and homopolymerize, thereby forming block copolymers consisting essentially of joined oxazine and oxazoline homopolymer chains. A surface coating of these block copolymers significantly inhibits soiling of the coated substrate. Also, when deposited on the surface of, or incorporated into a substrate, these block copolymers are effective antistats.

3,574,785

SILOXANE COMPOSITIONS CONTAINING TIN COMPOUNDS

Rajendra Nath Chadho, Ann Arbor, and Kailash Chandra Pande, Adrian, Mich., assignors to Stauffer-Wacker Silicone Corporation

No Drawing. Original application Sept. 2, 1965, Ser. No. 484,769, now Patent No. 3,470,221, dated Sept. 30, 1969. Divided and this application Nov. 6, 1968, Ser. No. 795,133
Int. Cl. C08g *47/00*
U.S. Cl. 260—825 6 Claims

A room temperature curable silicone composition comprising a polydiorganosiloxane, an organosilicon cross-linking agent and as a catalyst a compound conforming to the formula:

where R is a radical selected from the group consisting of alkyl, aryl, alkaryl, alkenyl, and haloalkyl, R' is an alkyl radical of from 1 to 15 carbon atoms and X is halogen. The above room temperature curable composition is used in mold making and in the construction industry for caulking.

3,574,786

POLYACETAL COMPOSITIONS STABILIZED WITH A POLYMER FROM A DICARBOXYLIC ACID DIHYDRAZIDE, DIAMINE AND UREA

Shinichi Ishida, Tokyo, Noboru Ohshima, Saitama-ken, and Hiromichi Fukuda and Takeshi Sato, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Asaka, Japan

Filed Dec. 20, 1968, Ser. No. 785,599
Claims priority, application Japan, Dec. 25, 1967, 42/82,876
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 4 Claims

Polyoxymethylene compositions may be stabilized by the addition of 0.1 to 10% of a polymeric condensate prepared by reacting a dicarboxylic acid dihydrazide, a diamine, and a urea, thiourea or derivatives thereof. The proportions of the reactants are 1:0.1–5:0.1–10 respectively. The condensate is prepared by heating the reactants at 50° C.–300° C. from 1 to 20 hours in air or inert gas.

A polyacetal composition containing as a thermal stabilizer a nitrogen-containing ternary condensation polymer comprising (A) dicarboxylic acid dihydrazide, (B) diamine or polyamine and (C) urea, urea derivatives, thiourea or thiourea derivatives.

3,574,787

ACETOACETIC ACID ESTERS AS ADDITIONAL ACCELERATORS FOR POLYESTER MOULDING AND COATING MATERIALS

Hans Rudolph, Krefeld-Bockum, and Joachim Schneider and Manfred Patheiger, Krefeld-Uerdingen, and Clemens Niehaus, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 690,106, Dec. 13, 1967. This application June 9, 1969, Ser. No. 831,780
Claims priority, application Germany, June 11, 1968, P 17 69 578.2
Int. Cl. C08f *1/62, 21/02, 21/04*
U.S. Cl. 260—863 4 Claims

The invention relates to moulding and coating compositions being rapidly hardenable at room temperature after the addition of hydroperoxide as polymerisation catalyst comprising mixtures of unsaturated polyesters derived from α,β-ethylenically unsaturated dicarboxylic acids and polyalcohols, and monomeric ethylenically unsaturated compounds copolymerisable therewith, said mixtures containing a cobalt salt as accelerator and acetoacetic acid esters which contain once or several times the radical

$$CH_3—O—CH_2—CO—O—R—$$

attached to a hydroxyl group, ether oxygen, sulfur, the —CH=CH— group or nitrogen, R meaning a divalent hydrocarbon radical having up to 3 carbon atoms in the chain.

3,574,788

THICKENABLE UNSATURATED POLYESTER RESIN SYSTEM

Melvin E. Baum, Monroeville, Pa., assignor to Koppers Company, Inc.

Filed Sept. 18, 1967, Ser. No. 668,585
Int. Cl. C08f *21/02*
U.S. Cl. 260—865 1 Claim

An unsaturated polyester resin system capable of being chemically thickened comprises: (1) an unsaturated polyester; (2) a copolymerizable vinyl aryl monomer; (3) N-vinylcarbazole; and (4) triphenyl phosphite. The system is chemically thickened by the polymerization of the N-vinylcarbazole which is catalyzed by the triphenyl phosphite. The system is, therefore, thickened before initiation of the vinyl copolymerization between the unsaturated polyester and the copolymerizable vinyl aryl monomer.

3,574,789

POLYESTER PROCESSING AIDS FOR PVC RESIN

Janis A. Bungs, Willoughby, and Charles L. Sieglaff, Mentor, Ohio, assignors to Diamond Shamrock Corporation

No Drawing. Filed Sept. 15, 1967, Ser. No. 668,221
Int. Cl. C08g *39/10*
U.S. Cl. 260—873 12 Claims

Rigid compositions, containing polyvinyl chloride resin, retain desirable rigidity, and exhibit enhanced processing properties, e.g., a lower processing temperature, as a result of blending the resin with a minor amount of low molecular weight (degree of polymerization below about 30) polyester resins. The polyester resins suitable for modifying agents are typically prepared from short chain aliphatic glycol and diacid building blocks. Resulting

homogeneous products, in addition to rigidity, retain essentially the desirable physical properties of unmodified solid compositions.

3,574,790

POLYSTYRENE COMPOSITION OF SUPPRESSED ELECTROSTATIC ACCUMULATION TENDENCIES

David W. Young, Homewood, Ill., and Henry V. Isaacson, Minneapolis, Minn., assignors to Sinclair Research, Inc., New York, N.Y.

No Drawing. Filed Dec. 7, 1967, Ser. No. 688,689
Int. Cl. C08f *7/04, 33/08*
U.S. Cl. 260—874 6 Claims

A polystyrene composition in which electrostatic charges are suppressed which comprises polystyrene and an amount, sufficient to suppress the accumulation of electrostatic charges, e.g. about 0.05 to 0.5 wt. percent, based on the polystyrene, of a copolymer of styrene and maleic anhydride having a ratio of styrene to maleic anhydride of about 1 to 4:1 and a molecular weight of about 700 to 8,000.

3,574,791

BLOCK AND GRAFT COPOLYMERS CONTAINING WATER-SOLVATABLE POLAR GROUPS AND FLUOROALIPHATIC GROUPS

Patsy O. Sherman, Bloomington, and Samuel Smith, Roseville, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 614,925, Feb. 9, 1967. This application Jan. 15, 1968, Ser. No. 698,016
Int. Cl. C08f *15/26, 15/28*
U.S. Cl. 260—884 8 Claims

Hybrid polymers provide sufficient oleophobicity and hydrophilicity in water so that fabrics treated therewith have increased ability to release oily stains on laundering. Oleophobic and hydrophilic moieties are combined in coatable copolymers so that the relative mobility of the moieties is assured under some set of conditions of temperature and environment. Surfaces treated with the resulting copolymers respond reversibly to changes of environment, e.g. gaseous to aqueous milieu and vice versa, by a change in kind of properties. As a non-limiting example, fluorochemical moieties and hydrophilic polyether moieties are combined through sulfur atoms to give polymers which are applied as oil and water-repellent treatments with other, e.g. crease resistant, textile treatments. Fabrics thus treated are repeatedly launderable to remove oily stains.

3,574,792

SYNTHETIC RUBBER COMPOSITION

Hideo Hayashi, Kawasaki-shi, Japan, assignor to Nippon Petrochemicals Company, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 15, 1968, Ser. No. 752,737
Claims priority, application Japan, Aug. 18, 1967, 42/52,728
Int. Cl. C08d *9/08;* C08f *29/12*
U.S. Cl. 260—894 6 Claims

A synthetic rubber composition having improved tackiness which comprises

(i) a synthetic rubber and an addition product of unsaturated acid or anhydride thereof and a hydrocarbon resin obtained by polymerizing a fraction boiling within the range of from 20° C. to 280° C. and containing unsaturated hydrocarbons, said fraction being a by-product obtained in the cracking of petroleum oil to produce olefins, or

(ii) a synthetic rubber and an esterified product of said addition product.

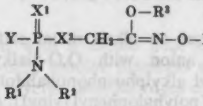
3,574,793

IMINO PHOSPHORAMIDATES

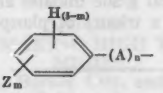
Sidney B. Richter, Skokie, and Ephraim H. Kaplan, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed July 24, 1968, Ser. No. 747,077
Int. Cl. C07f *9/08, 9/16, 9/40*
U.S. Cl. 260—944 6 Claims

This invention discloses compounds of the formula



wherein Y is selected from the group consisting of alkyl, alkenyl, alkoxy, alkenyloxy, alkylthio and



wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, *m* is an integer from 0 to 5, A is selected from the group consisting of oxygen, sulfur, and alkylene, and *n* is an integer from 0 to 1; R^1 and R^2 are independently selected from the group consisting of hydrogen and alkyl; R^3 and R^4 are alkyl; and X^1 and X^2 are independently selected from the group consisting of oxygen and sulfur. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier, and as an essential active ingredient, in a quantity toxic to insects and acarids a compound of the above description; and further a method of destroying insects and acarids which comprises applying to said insects and acarids an aforedescribed insecticidal and acaricidal composition.

3,574,794

ACRYLIC OR METHACRYLIC ESTERS OF HYDROXYALKYL PHOSPHATE ESTERS AND PROCESS FOR MAKING SAME

Sampse R. Hargis, Jr., Brazoria, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 22, 1968, Ser. No. 699,288
Int. Cl. C07f *9/08;* C08f *45/58*
U.S. Cl. 260—952 6 Claims

Flame retardant thermosettable resins are prepared by incorporating therein a flame retardant amount of a polymerizable phosphate ester prepared by reacting a hydroxyalkyl acrylate or methacrylate with P_2O_5 and subsequently reacting the product with an alkylene oxide to convert substantially all the unreacted phosphoric acid groups to hydroxyalkyl ester groups.

3,574,795

CATIONIC ADDITION OF DIHYDROCARBYL THIOPHOSPHORIC ACIDS TO CONJUGATED DIENES AND PRODUCT

Alexis A. Oswald, Mountainside, Wolfgang H. Mueller, Elizabeth, and Francis A. Daniher, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 22, 1967, Ser. No. 640,355
The portion of the term of the patent subsequent to Sept. 5, 1984, has been disclaimed
Int. Cl. C07f *7/16;* C07d *105/04;* A01n *9/36*
U.S. Cl. 260—956 17 Claims

Dihydrocarbyl dithiophosphoric and monothiophosphoric acids add to conjugated dienes in acid media by a

cationic addition mechanism; the monoadducts formed thereby are useful as pesticides and lubricating oil additives.

3,574,796

PROCESS FOR THE PREPARATION OF PHOSPHORUS ACID ESTERS

David E. Ramey and Kurt H. G. Pilgram, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 15, 1968, Ser. No. 767,852

Int. Cl. C07f *9/16, 9/40*

U.S. Cl. 260—972 7 Claims

In the reaction of an alkali metal salt of an alpha-haloacetophenone anion with O,O-dialkyl phosphorohalido- and O-alkyl alkylphosphonohalidothioates to prepare O-[2-halo-1-(polyhalophenyl)vinyl] esters of O,O-dialkyl phosphorothioic and O-alkyl alkylphosphonothioic acids, respectively, increased yields of the esters are obtained when technical grade thioates are pre-treated with a small amount of a triester of phosphorous acid.

3,574,797

PROCESS FOR MAKING 2-PHENOXY-4,5-DIBENZO-1-OXA-3-THIA-2-PHOSPHOLANES

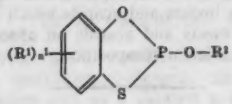
James J. Hodan, Williamsville, and James L. Dever, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Aug. 31, 1967, Ser. No. 664,611

Int. Cl. C07d *105/04;* C08f *45/58;* A01n *9/36*

U.S. Cl. 260—973 11 Claims

A process for producing a novel compound of the formula:



in which R^2 is selected from the group consisting of aryl and substituted aryl, in which R^1 is selected from the group consisting of alkyl, substituted alkyl, aryl, and substituted aryl, for example, and in which n^1 is from 0 to 4. Where n^1 is more than 1, the multiple substituents may be either the same or different. A compound of this type is useful as a bactericide. Additionally, a compound of this type is suitable for use as an intermediate in the synthesis of more complicated compounds, and as a polymer stabilizer.

3,574,798

DIARYL PHOSPHORHYDRAZIDOTHIONATE PROCESS

Andrew C. Hazy and Franklin P. Darmory, New Haven, Conn., assignors to Olin Corporation

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,153

Int. Cl. C07f *9/14, 9/22*

U.S. Cl. 260—984 3 Claims

Diaryl phosphorhydrazidothionates are prepared by reacting a pheol having the formula ROH wherein R is alkyl-substituted phenyl having 9 to 18 carbon atoms, with thiophosphoryl chloride and hydrazine in the presence of potassium carbonate in a chloroform medium at 40–70° C. These diaryl phosphorhydrazidothionates are valuable antioxidants for polyolefins.

3,574,799

THIAZOLYLPENICILLINS AND THEIR PREPARATION

Peter Bamberg, Enhorna, and Berndt Olof Harald Sjoberg, Sodertalje, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

No Drawing. Filed Mar. 18, 1968, Ser. No. 714,000

Claims priority, application Great Britain, Mar. 20, 1967, 12,880/67

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 7 Claims

A new class of penicillins is disclosed, which penicillins contain a thiazolyl, a thiazolylmethyl or a substituted thiazolylmethyl group in the side chain. Method of synthesis and evaluations of anti-bacterial activity are described.

3,574,800

METHOD OF PREPARING STAPLE-CONTAINING PROPELLANT GRAINS

Everette M. Pierce, Somerville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed Nov. 1, 1965, Ser. No. 506,018

Int. Cl. C06b *21/02*

U.S. Cl. 264—3 5 Claims

Staple-containing propellant grains are prepared by extruding strands of all of the propellant ingredients except the plasticizer around a continuous metal wire. The extruded strands are chopped into short pellets and the pellets are disposed in a mold. Liquid plasticizer is then introduced, and the grain is cured. In this process, degradation of metal staples during mixing and cutting of pellets is avoided, and the staples take the form of wires which extend the full length of the pellets. The burning characteristics of the grain are substantially improved by the increased staple length.

3,574,801

METHOD FOR MAKING PANELS OF THE ARTIFICIAL STONE-TYPE

Georg Jauker, Bologna, Italy, assignor to Repla SA, Lugano, Switzerland

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,913

Claims priority, application Switzerland, Dec. 6, 1967, 17,159/67

Int. Cl. B28b *1/08, 1/16*

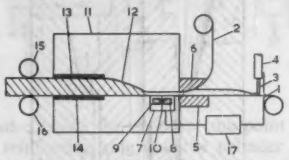
U.S. Cl. 264—37 7 Claims

Method of making panels of the artificial stone-type from conglomerates of synthetic resins and granulates, particularly granite and marble wherein the resins are catalyzed, the granulates are added thereto and homogenized, a mold is filled with the homogenized mass at normal working temperatures, the mold is vibrated, an excess of quartz sand is distributed over the back side of the panel, the mold is passed through a polymerization tunnel, the flash is removed, the mold is cooled and the panel is removed from the mold.

3,574,802
PROCESS FOR THE PRODUCTION OF FOAMED SLABS AND LAMINATES WHILE CONTINUOUSLY SENSING AND ADJUSTING THE WIDTH OF THE SLAB

Lesley Hinds, Welwyn Garden, and David Robin Lander, Shillington, near Hitchin, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 21, 1968, Ser. No. 769,340
Claims priority, application Great Britain, Oct. 23, 1967, 48,094/67
Int. Cl. B29d *27/04*
U.S. Cl. 264—47 9 Claims

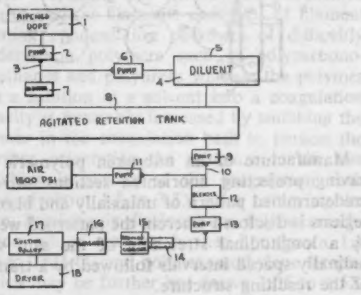


A process for the production of foam synthetic plastic materials optionally provided with a facing sheet on one or more surfaces which comprises depositing a foamable composition onto a carrier web, applying a second web above and in contact with the deposited foamable composition, passing the sandwich thus produced through a metering slit which produces a controlled distance between the webs, sensing the width of the foamable composition subsequent to its passage through said slit then adjusting the rate of depositing of said foamable composition in response to the sensed width and heating to foam and set the deposited layer.

3,574,803
METHOD OF MANUFACTURING A FOAMED CELLULOSE ESTER FILTER

Bruce B. Allen and Jesse L. Riley, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 15, 1966, Ser. No. 594,500
Int. Cl. B29d *7/02*; C08b *27/04, 17/42, 21/02, 27/22, 29/38*
U.S. Cl. 264—50 13 Claims



Cellulose ester foams are prepared by dissolving an inert gas under pressure into ripened cellulose ester dope at its incipient precipitation point and precipitating the cellulose ester while reducing the pressure on said dope to produce a solid foam.

3,574,804
METHOD FOR PREPARING FILAMENTS FROM THERMOPLASTIC FILM

Paul Joonase, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

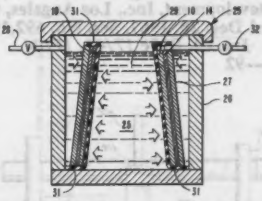
Filed Nov. 18, 1966, Ser. No. 599,991
Int. Cl. B29c *17/14*
U.S. Cl. 264—80 2 Claims

According to the invention, superior filaments having beaded edges and which are suitable for twisting and weaving are prepared from thermoplastic film by severing the film with flame as it is selectively cooled while passing over a cooled, grooved roll. Alternately, the film may be cooled and the flame selectively applied as with a gas flame fitted with a slitted heat shield. By using a double wound film, tubular filaments are prepared when the film is heat severed and the edges of two or more filaments fuse together.

3,574,805
METHOD OF MAKING HIGH TEMPERATURE BODIES

Donald M. Hatch, Harbor City, and Walter W. Wood, Inglewood, Calif., assignors to Hitco

Filed Jan. 17, 1966, Ser. No. 521,152
Int. Cl. B29c *17/04, 23/00*; B29d *23/03*; B29h *7/02*
U.S. Cl. 264—88 4 Claims



Large unitary ablative parts are prepared by molding a plurality of individual segments comprising generally randomly oriented fibers disposed within a settable and curable resin matrix at elevated temperatures and pressures to partially cure and densify the segments, followed by assembling the segments into the desired final configuration and thereafter heat curing and densifying the plurality of segments at elevated temperatures and pressures sufficient to join the segments into a finally cured unified structurally stable ablative part.

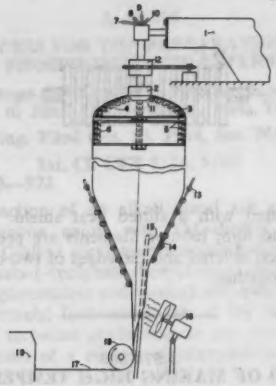
3,574,806
METHOD FOR PRODUCING FLATTENED SHEETING OR FLATTENED TUBING OF MOLTEN THERMOPLASTIC RESINS CIRCUMFERENTIAL CHILL CASTING

Willis A. Potter, Orange, Tex., and Richard L. Alexander, Greensburg, Ind., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1967, Ser. No. 666,092
Int. Cl. B29c *17/07*
U.S. Cl. 264—89 5 Claims

Method for producing polymer film by extruding a polymer from a radial die to form film tubing, cooling the extruded polymer film tubing over an arcuate, shoulder-shaped heated mandrel while the polymer film tubing is supported by a thin layer of moving air, then further cooling the polymer film tubing by contacting the tubing with a cooled porous mandrel which has internal vacuum to create intimate contact, then slitting the tubing,

blowing air into the opening caused by the slit, and causing the slit tubing to lay flat with a wedge-shaped



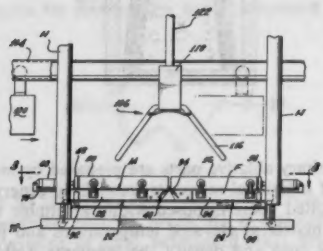
tubing opener, then finally winding up the flat sheet into rolls.

3,574,807

METHOD OF MOLDING WITH AN ANGULATED CAVITY FORM

Edward A. Heavener, Long Beach, Calif., assignor to Gulf Development, Inc., Los Angeles, Calif.

Filed Dec. 20, 1967, Ser. No. 692,193
Int. Cl. B29c *17/02, 17/04*
U.S. Cl. 264—92 **6 Claims**



Sheet material to be formed over the angulated cavity form C (FIGS. 1 and 2) is clamped on a frame F. The frame F and preheated sheet M are lowered by hydraulic motors H. Abutments A engage the lowering frame F and cause it to fold about the angulated form (FIGS. 4*a* and 4*b*) progressively to effect seals along side flanges S of the form (FIG. 2) and ultimately to form seals along the end flanges E by an overdraw. Vacuum is then applied. The depth of draw is minimized; the wall thickness is substantially maintained to achieve substantial strength in the finished part; very little plastic material is wasted as the molded part is trimmed.

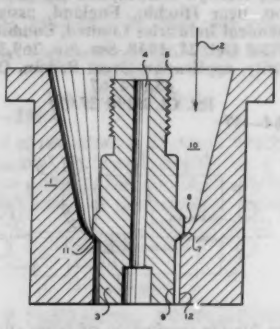
3,574,808

METHOD OF FORMING PATTERNED ARTICLES EMPLOYING DIFFERENTIAL PRESSURE

Gerald A. Matthews and Claude C. Spencer, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Oct. 16, 1968, Ser. No. 768,144
Int. Cl. B29c *17/07;* B29f *3/06*
U.S. Cl. 264—98 **10 Claims**

Patterned articles are produced from heat softenable viscoelastic pseudoplastics at temperatures above their softening points by passing said materials through a restricted cross-section at a temperature above the softening point at a rate sufficient to produce turbulent flow and internal strain within said heat softenable material in excess of the critical strain rate of said material to produce patterned deformations therein and conforming the



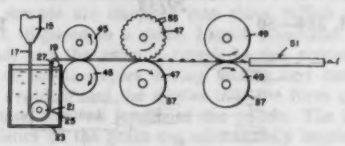
resultant patterned material to a predetermined shape at a temperature above the softening point at which the material will not flow substantially under its own weight and reducing the temperature to a point below the softening point.

3,574,809

METHOD FOR MAKING ORIENTED WEBS POSSESSING PROJECTING UNORIENTED SECTIONS

Theodore H. Fairbanks, West Chester, Robert F. Gillespie, Havertown, and Dorsey C. Nelson, Springfield, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 17, 1968, Ser. No. 784,382
Int. Cl. D01d *5/20*
U.S. Cl. 264—167 **7 Claims**



Manufacture of an unbroken polymeric web or film having projecting unoriented sections surrounded by a predetermined pattern of uniaxially and biaxially oriented regions is disclosed wherein the patterned web is produced by a longitudinal stretching of the said web at longitudinally spaced intervals followed by a transverse stretch of the resulting structure.

3,574,810

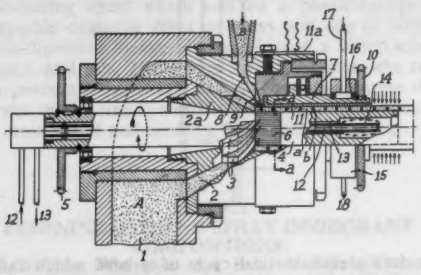
METHOD FOR MANUFACTURING PIPES POSSESSING THERMOPLASTIC REINFORCEMENT

Jacques Tournery, Clermont-Ferrand, and Fernand Tuyeras, Aulnat, France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed Mar. 13, 1968, Ser. No. 712,819
Claims priority, application France, Mar. 15, 1967, 98,978; June 9, 1967, 109,899
Int. Cl. B29d *23/04;* B29f *3/10*
U.S. Cl. 264—173 **5 Claims**

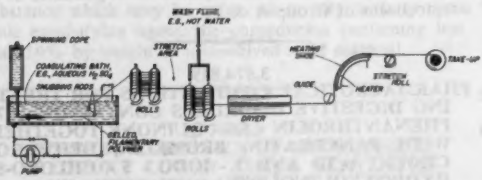
This invention relates to the manufacture of thermoplastics pipes in which a reinforcement is contained within a wall thereof, the reinforcement also being made from thermoplastics material and in the form of a helically

wound ring. In accordance with this invention, a continuous cylinder is extruded in a machine to form the wall of the pipe and, in the same machine, the reinforcing



ring is extruded inside the cylinder: the point of application of the reinforcing ring and the cylinder being relatively rotated along the axis of the cylinder itself.

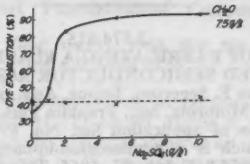
3,574,811
POLYAMIDE WET-SPINNING AND STRETCHING PROCESS
Saunders E. Jamison, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.
Continuation of application Ser. No. 507,472, Nov. 12, 1965. This application Oct. 8, 1969, Ser. No. 866,120
Int. Cl. D01d *5/06, 5/16;* **D01f** *7/04*
U.S. Cl. 264—184 **10 Claims**



A method of increasing the tenacity of wet-formed shaped structures such as filaments and films of filament and film forming condensation polymers of difficultly meltable condensation polymers such as polycarbonomides, polyurethanes and polyureas wherein the polymer is extruded as a solution in a solvent into a coagulation bath. The tenacity is favorably increased by snubbing the extruded polymer in the coagulation bath to tension the same and further orientating the structure in the wet state by stretching it outside of the coagulation bath to a total draw of about 1.5 to 3.5X prior to drying the gelled structure. Particularly disclosed are polyhexamethylene adipamide, which may be further hot drawn 1.1 to 2.5X at 100 to 210° C., and polyhexamethylene terephthalamide, which may be further hot drawn 1.05 to 1.5X at 270 to 350° C.

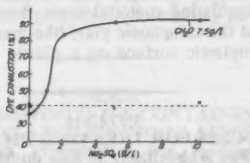
3,574,812
PROCESS FOR PRODUCING POLYNOSIC FIBERS
Masaichi Kubota, Taro Yamamura, Atsushi Kawai, and Takehiro Katsuyama, Ohtake-shi, Masamichi Ikeda, Iwakuni-shi, and Seiichi Omoto, Ohtake-shi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Sept. 22, 1967, Ser. No. 669,800
Claims priority, application Japan, Sept. 26, 1966, 41/62,595; Oct. 12, 1966, 41/67,012
Int. Cl. D01f *3/28*
U.S. Cl. 264—197 **6 Claims**

A viscose having a γ-value of at least 50 is extruded into a coagulation bath containing formaldehyde, and the resulting filaments are stretched in a second bath at 45° to 75° C. under a tension of up to 0.3 g./d. and then treated in a third bath containing alkali metal-, alkaline earth metal- and/or ammonium-salts of sulfuric acid at a pH of 2.0 and 10.5 and a temperature of 30° to 70° C.



The obtained highly crimped polynosic fibers have an asymetric structure with the core-stainable layer positioned at the inside track of the crimp bend; the dye exhaustion is at least 40%; wet modulus is 0.5 to 1.8 g./d. and crimps are more than 10/25 mm.

3,574,813
PROCESS FOR PRODUCING POLYNOSIC FIBERS
Masaichi Kubota, Taro Yamamura, Atsushi Kawai, and Takehiro Katsuyama, Ohtake-shi, Masamichi Ikeda, Iwakuni-shi, and Seiichi Omoto, Ohtake-shi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Original application Sept. 22, 1967, Ser. No. 669,800. Divided and this application Feb. 24, 1969, Ser. No. 801,317
Int. Cl. D01f *3/28*
U.S. Cl. 264—197 **6 Claims**



Improved polynosic fibers are obtained by extruding a viscose into a coagulation bath, stretching the resultant filaments in a second bath, treating the stretched filaments in a third bath and subjecting the fibers to regeneration. Said viscose has a γ-value of at least 50. Said coagulation bath contains sulfuric acid, 20 to 250 g./l. of sodium sulfate and more than 3 g./l. of formaldehyde. Said second bath is kept at above 60° C. and the filaments are stretched therein under a tension of at least 0.3 g./d. Said third bath contains an alkali metal salt, an alkaline earth metal salt, an ammonium salt of sulfuric acid, or a mixture thereof and is kept at a pH of 2.0 to 10.5 and at 40° to 90° C. Thus produced polynosic fibers have high tenacity, high wet-modulus and excellent fibrillation resistance.

3,574,814
PROCESS FOR MANUFACTURING POLYCARBONATE FILAMENTARY
Béla von Falkai, Wolfgang Rellensmann, Manfred Reichardt, and Alfred Reichle, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation of application Ser. No. 526,688, Feb. 11, 1966. This application Oct. 6, 1969, Ser. No. 864,960
Claims priority, application Germany, Apr. 22, 1965, F 45,877
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 **3 Claims**

Filamentary and foil material from high molecular weight linear polycarbonate having a molecular weight from 95,000–150,000 and a crystalline content of at least 18% produced by shaping a solution of the polycarbonate

in an organic solvent into linear form and stretching the linear form shaped material at a draw ratio of at least 4:1 by discrete point stretching at a temperature above the crystallization temperature limit and below the crystallite melting point thereof.

3,574,815

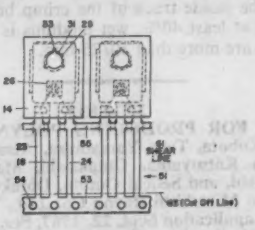
METHOD OF FABRICATING A PLASTIC ENCAPSULATED SEMICONDUCTOR ASSEMBLY

Eugene E. Segerson, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of application Ser. No. 693,605, Dec. 26, 1967, which is a continuation-in-part of application Ser. No. 564,818, July 13, 1966. This application Mar. 23, 1970, Ser. No. 20,458

Int. Cl. B29d *3/00*

U.S. Cl. 264—269 4 Claims



A method of plastic encapsulation including the use of a core pin in a pressure-type mold which forces a nonplastic plate-like member against a die face for preventing plastic encapsulating material from flowing between the die face and the nonplastic plate-like member to form an exposed nonplastic surface on a plastic encapsulated assembly.

3,574,816

PROCESS FOR TREATING RICE HUSK

Ala El Dine Abdellatif, 35 Rue du Mont-Valerien, 92 Saint Cloud, France

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,766

Claims priority, application France, Apr. 28, 1967, 104,583

Int. Cl. B28b *3/00*; C04b *35/22*

U.S. Cl. 264—333 18 Claims

Process for treating rice husk comprising roasting the rice husk during less than 60 seconds, in the presence of oxygen until the rice husk has lost 30–70% of its weight, mixing the rice husk as so obtained with at least 10% by weight of a water-soluble compound of calcium salts to form a mixture, moistening said mixture with an aqueous solution of an aluminum compound and, as a catalyst, piperidine, diphenylurea and aminoguanidine hydrochloride, whilst maintaining the pH of the mixture above 7, compacting the moistened mixture and, after aging the pressed product contacting it with water and then drying the moist product.

3,574,817

METHOD FOR THE MANUFACTURE OF CONCRETE PIPE FITTINGS

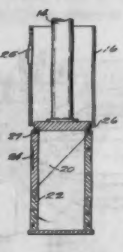
Glenn F. Ruegsegger, Bay City, Mich., assignor to Praschak Machine Company, Inc.

Original application May 9, 1967, Ser. No. 637,170, now Patent No. 3,500,514, dated Mar. 17, 1970. Divided and this application Mar. 2, 1970, Ser. No. 15,641

Int. Cl. B28b *7/10*; B29c *7/00*

U.S. Cl. 264—336 1 Claim

The present disclosure pertains to an automatic drain tile making machine which employs vertically reciprocal packer heads and push-rods to form a tile within a mold and to eject the formed tile onto a pallet by axially moving the push-rods through the mold. The machine is provided with a plurality of molds which are fixed to a turntable so as to permit simultaneous molding and ejection during each vertical cycle of a head which carries the packer heads and push-rods.



3,574,818

DIAGNOSTIC FOR RHEUMATISM

Gunter Wilhelm, Langen, Hesse, Germany (% Farbwerke Hoechst AG, Frankfurt am Main, Germany)

No Drawing. Filed Aug. 3, 1967, Ser. No. 658,058

Claims priority, application Germany, Aug. 6, 1966, R 43,854

Int. Cl. G01n *33/16*

U.S. Cl. 424—9 3 Claims

A diagnostic for rheumatism, adaptable to topical application to the skin, consisting essentially of an aqueous solution of a nucleoproteide. A method for preparing the diagnostic by isolation from aqueous homogenizates of a streptococcus of Group A or C.

3,574,819

PHARMACEUTICAL COMPOSITIONS FOR TREATING DIGESTIVE DISORDERS CONTAINING 4,7-PHENANTHROLIN - 5,6 - QUINONE TOGETHER WITH PANCREATIN, BROMELIN, DEHYDROCHOLIC ACID AND 7 - IODO - 5 - CHLORO-8-HYDROXYQUINOLINE

Franz Gross, Bottmingen, Switzerland, and Christian Bittner, Wehr, Baden, and Rudolf Reipert, Schworstadt, Germany, Guenther Mueller, Arlesheim, Switzerland, and Kurt Bauer, Opladen-Quettingen, Germany, assignors to Ciba Corporation, New York, N.Y.

No Drawing. Filed Dec. 4, 1967, Ser. No. 687,432

Claims priority, application Switzerland, Dec. 8, 1966, 17,502/66

Int. Cl. A61k *9/00*

U.S. Cl. 424—21 4 Claims

New pharmaceutical preparations for oral administration containing as active ingredients 4,7-phenanthroline-5,6-quinone, pancreatin, bromelin, dehydrocholic acid and 7-iodo-5-chloro-8-hydroxyquinoline, and a method of treating digestive disorders consisting in administrating such pharmaceutical compositions.

3,574,820

MEDICINAL DOSAGE FORMS OF UNPOLYMERIZED THIOLATED GELATIN WITH A CROSS-LINKING ACCELERATING AGENT PROVIDING SLOWLY RELEASED MEDICATION FROM A SWOLLEN MATRIX

Richard H. Johnson and Englebert L. Rowe, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation of application Ser. No. 302,741, Aug. 16, 1963. This application Jan. 8, 1968, Ser. No. 696,102

Int. Cl. A61k *27/12*

U.S. Cl. 424—22 4 Claims

A dry solid medicinal dosage form comprising a medicinal agent, the reaction product of gelatin with N-acetyl-

homocysteine thiolactone having an average molecular weight of from 10,000 to 500,000 and having an average of from about 3.5 to about 30—SH equivalents per 100,000 grams and accelerating agent (hardening or sulfydryl cross-linking agent which can be a pharmacologically acceptable oxidizing agent or base) and one or both of a non-digestible hydrophilic colloid and a water soluble mineral acid salt. The dosage form containing the reaction product of gelatin with N-acetylhomocysteine thiolactone in the unpolymerized form, i.e., the product is not cross-linked and contains free sulfhydrol groups.

3,574,821

FEMININE HYGIENE SPRAY DEODORANT COMPOSITIONS

Rolf Wilhelm Pfirrmann and Peter Geistlich, Lucerne, Switzerland, assignors to Mediline A.G., Wolhusen, Lucerne, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 370,111, May 25, 1964. This application Oct. 23, 1967, Ser. No. 677,018

Claims priority, application Great Britain, May 31, 1963, 21,976/63

Int. Cl. A61k *9/00;* **A61l** *23/00*

U.S. Cl. 424—45 **10 Claims**

An article of toiletry in the form of an aerosol spray unit for use in feminine hygiene is prepared by filling a suitable aerosol container with a composition including an organic aerosol propellant substantially at least as volatile as dichlorodifluoromethane, from 0.01%–10% by weight of at least one cosmetically acceptable bactericide and from 0.01%–10% by weight of at least one emollient substance which may be a fat, oil or oily or fatty nonionic emulsifying agent, the composition containing less than 10% by weight of undissolved solid material.

3,574,822

POWDERED COSMETICS OF HYDROPHILIC HYDROXY LOWER ALKYL ACRYLATES AND METHOCRYLATES

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 567,856, July 26, 1966, Ser. No. 650,259, June 30, 1967, and Ser. No. 654,044, July 5, 1967. This application July 10, 1968, Ser. No. 743,626

Int. Cl. A61k *7/00, 7/02, 7/10*

U.S. Cl. 424—47 **12 Claims**

Cosmetic preparations such as powders, and the like are prepared by adding a powdered hydrophylic acrylate or methacrylate polymer to the selected powdered cosmetic ingredients. The hydrophylic polymer can be cross-linked.

3,574,823

DENTIFRICE CONTAINING VISIBLE AGGLOMERATED PARTICLES OF POLISHING AGENTS

Francis D. Roberts, Millington, and John J. Steinke III, Somerville, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Aug. 5, 1968, Ser. No. 750,028

Int. Cl. A61r *7/16*

U.S. Cl. 424—49 **15 Claims**

Dentifrice containing visible, palpable and esthetically pleasing substantially water-insoluble agglomerated particles of polishing agents. The particles are reduced to smaller impalapable size by mild mechanical action such as by toothbrushing. The agglomerates include water-insoluble polishing agent such as insoluble sodium metaphosphate or dicalcium phosphate and may also contain a binding agent such as gum acacia, gelatin, starch, carboxymethyl cellulose or the like.

3,574,824

ANHYDROUS TOOTHPASTE FORMULATION

James Echeandia, Richmond, Va., Yashvant Kapadia, Lafayette, Ind., Howard Rubin, Belleville, N.J., and Jacques Tossounian, Bryn Mawr, Pa., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

No Drawing. Filed May 3, 1968, Ser. No. 726,547

Int. Cl. A61k *7/16*

U.S. Cl. 424—50 **2 Claims**

An anhydrous toothpaste base is prepared using the following ingredients: (1) an oil having a viscosity of 100 to 300 centipoises, such as mineral oil, light liquid petrolatum thickened to the necessary viscosity, or an antioxidant stabilized vegetable oil; (2) a combination of polyethylene glycols having a viscosity of 2200 to 3400 centipoises with molecular weights ranging from 550 to 6000; (3) a non-toxic, non-ionic emulsifier which is a mixture of glycerides of C_{12} to C_{17} fat-forming fatty acids; (4) at least one binding agent selected from polyvinylpyrrolidone having an average molecular weight of 40,000 and a colloidal magnesium aluminum silicate; and (5) a compound having a negative heat of hydration which can be a hexahydric alcohol such as mannitol or inositol. To this base, 30% to 70% of an abrasive may be added. The abrasive may be aluminum hydrate and/or calcium sulfate and can contain a small amount of aluminum silicate. Dentrifrice additives such as enzymes, bleaching agents which achieve whitening and brightening effects, fluorides, and the like, which are incompatible with standard hydrous toothpaste formulations will remain stable and active when added to this anhydrous toothpaste base. Taste, consistency and foaming properties of the paste are equivalent to hydrous toothpaste formulations.

3,574,825

SUNSCREEN COMPOSITIONS CONTAINING POLYMETHYLATED MUCONIC ACIDS

Oscar L. Norman, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,152

Int. Cl. A61l *23/00*

U.S. Cl. 424—59 **12 Claims**

A composition for application to the human skin for protection against erythematogenic radiation which comprises a cosmetic base carrier containing 1.0 to 15.0 weight percent of certain polymethylated muconic acids or their hydrocarbyl esters, said acids being selected from the group consisting of α,α'-dimethylmuconic acid, α,β'-dimethylmuconic acid, α,α',β-trimethylmuconic acid, α,β,β'-trimethylmuconic acid, and α,α'-β,β'-tetramethylmuconic acid, and to methods of preparing said compositions.

3,574,826

HYDROPHILIC POLYMERS HAVING VITAMINS ABSORBED THEREIN

Thomas H. Shepherd and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 567,856, July 26, 1966, Ser. No. 650,259, June 30, 1967, and Ser. No. 654,044, July 5, 1967. This application Feb. 27, 1968, Ser. No. 708,517

Int. Cl. A61k *15/00*

U.S. Cl. 424—81 **11 Claims**

A hydrophilic cross-linked polymeric composition having vitamins absorbed therein.

The hydrophilic cross-linked polymer is prepared by admixing in the solvent-free state a major amount of a water-soluble polymerizable monester of an olefinic acid having at least one substituted hydrophilic functional group with a minor amount of a free radical, vinyl polymerization catalyst in an anaerobic atmosphere and

heating from ambient temperatures to about 80° C. until the said monomer is water-insoluble, cooling said resulting mixture to ambient temperature and adding a minor amount of a polymerizable diester of one of said olefinic acids having at least two esterifiable hydroxy groups along with an additional minor amount of one of said catalysts sufficient to form a liquid casting syrup adapted to be polymerized in situ. Powders which may be produced from the resulting product are mixed with selected vitamins which can be reconstituted in solution at will. Also, because of the compact form of the vitamin carrying powders encapsulation may be performed to prevent deterioration of the vitamin component.

3,574,827
OINTMENT BASE COMPOSITION
Alan Beerbower, Scotch Plains, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed Dec. 29, 1966, Ser. No. 605,557
Int. Cl. A61k *9/06, 7/00*
U.S. Cl. 424—83 5 Claims

Unctuous ointment bases for topical application are prepared by gelling synthetic or natural white oils with polypropylene or ethylene-propylene copolymer of 80 to 95 wt. percent isotactic content.

3,574,828
METHOD OF OBTAINING ANTI-LYMPHOMA ANTIBODIES
Julia McCain Lampkin-Hibbard, Oklahoma City, Okla., assignor of fractional part interest to Roderick Knott, Miami, Fla.
Continuation of application Ser. No. 261,687, Feb. 28, 1963. This application July 14, 1967, Ser. No. 653,576
Int. Cl. A61k *27/00*
U.S. Cl. 424—85 3 Claims

This invention describes the method of obtaining anti-lymphoma antibodies which comprises isolating nucleoproteins from a lymphosarcoma, introducing the nucleoproteins into a host, withdrawing blood from the host, and obtaining antibodies from the blood.

3,574,829
METHOD OF IMPROVING THE CONCEPTION RATE IN EWES
Jack F. Wagner and Edward L. Veenhuizen, Greenfield, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Continuation-in-part of application Ser. No. 541,086, Apr. 8, 1966. This application Aug. 6, 1968, Ser. No. 750,453
Int. Cl. A61k *17/00, 17/06*
U.S. Cl. 424—100 8 Claims

The conception rate in ewes is improved by the administration of a gonadotropin after onset of estrus and insemination.

3,574,830
PROCESS FOR INHIBITING THE TRANSFER OF ANTIBIOTIC RESISTANCE DETERMINANTS IN BACTERIA
Joanne Roeser, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 749,584, Aug. 2, 1968. This application Oct. 17, 1968, Ser. No. 768,502
Int. Cl. A61k *21/00*
U.S. Cl. 424—181 7 Claims

Process for inhibiting the transfer of antibiotic resistance determinants from donor bacteria to recipient bacteria by the use of an effective amount of a lincomycin antibiotic.

3,574,831
THERAPEUTIC HEPARIN-SODIUM TAUROCHOLATE COMPOSITIONS
Robert Henry Engel and Stephen Joseph Riggi, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed May 29, 1968, Ser. No. 732,854
Int. Cl. A61r *27/00*
U.S. Cl. 424—183 3 Claims

A composition capable of absorption through walls of the alimentary canal and producing heparin-like effects comprising heparin and at least about .25 part, by weight of sodium taurocholate per part of heparin.

3,574,832
THERAPEUTIC HEPARIN-SURFACTANT COMPOSITIONS
Robert Henry Engel and Stephen Joseph Riggi, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed May 29, 1968, Ser. No. 732,855
Int. Cl. A61k *17/18*
U.S. Cl. 424—183 5 Claims

A composition capable of absorption through the walls of the alimentary canal and producing heparin-like effects, comprising heparin and more than about .001 part by weight per part of heparin of a surfactant selected from the group consisting of sodium lauryl sulfate, dioctyl sodium sulfosuccinate, sodium hexyl sulfate, sodium lauryl sulfonate, sodium cetyl sulfonate and mixtures thereof.

3,574,833
USE OF TRIMETHOPRIM AND SULFALENE AS ANTIMALARIALS
John D. Arnold, Kansas City, Mo., and Daniel C. Martin, Overland Park, Kans., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Oct. 29, 1968, Ser. No. 771,636
Int. Cl. A61k *27/00*
U.S. Cl. 424—229 3 Claims

The discovery that trimethoprim can be used alone or in combination with sulfalene to treat and cure strains of malaria that are resistant to known antimalarials, without any undesirable toxic side-effects.

3,574,834
MEDICINAL SOPORIFIC COMPOSITION
Samuel Kuna, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Apr. 30, 1969, Ser. No. 820,669
Int. Cl. A61k *27/00*
U.S. Cl. 424—235 3 Claims

A soporific pharmaceutical composition containing from 160 to 2600 mg. of salicylamide and from ⅓ to equal that amount (preferably ½) of glyceryl guaiacolate, and if desired, an effective amount of a drowsiness inducing antihistamine.

3,574,835
USE OF NITROALKYL ACID SULFATES AND NEUTRALIZATION PRODUCTS THEREOF AS MICROBIOCIDES
Richard E. Berkley, Edmonton, Alberta, Canada, and Carl O. Tant, Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 411,095, Nov. 13, 1964. This application June 3, 1966, Ser. No. 554,979
The portion of the term of the patent subsequent to May 13, 1986, has been disclaimed
Int. Cl. A01n *9/00*
U.S. Cl. 424—244 17 Claims

Nitroalkyl acid sulfates and neutralization products thereof are used as microbiocides.

3,574,836

COMPOSITIONS COMPRISING HYDROCHLOROTHIAZIDE AND 3,4-DIHYDRO-2(1H)ISOQUINOLINE CARBOXAMIDE

William Bernard Abrams, South Orange, and Sven Evert Svenson, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 418,529, Dec. 15, 1964. This application Nov. 26, 1968, Ser. No. 779,261

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 10 Claims

Compositions are described which contain 6-chloro-3,4-dihydro-7-sulfamyl-2H-1,2,4-benzothiadiazine 1,1-dioxide, or a non-toxic alkali metal salt thereof, and 3,4-dihydro-2(1H)-isoquinoline carboxamidine, or an acid addition salt thereof, as the active ingredients. The composition is useful in the treatment of the symptoms of hypertension.

3,574,837

NEW SCHIFF'S BASES, AND THEIR USE AS AGRICULTURAL PESTICIDES

Henri Pacheco, Bron, and Lucien Cronenberger, Daniel Pillon, and Jean Thiolliere, Lyon, France, assignors to PEPRO-Societe pour le Developpement et la Vente de Specialites Chimiques, Lyon, France

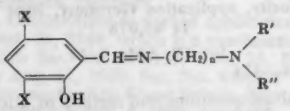
No Drawing. Filed May 21, 1968, Ser. No. 730,935

Claims priority, application France, May 26, 1967, 48,715

Int. Cl. C07c *119/10*

U.S. Cl. 424—248 9 Claims

New Schiff's bases having the general formula



wherein X is halogen, *n* is 2 or 3, and R' and R'' are identical or different alkyl radicals which may also form a heterocycle with the nitrogen atom and may contain another heteroatom of O, N or S; and the quaternary salts and metal chelates thereof; and their use as fungicides.

3,574,838

6-SULFAMOYL - 2,3 - DICHLOROQUINOXALINE COMPOSITIONS AND METHOD OF TREATING GASTRIC HYPERACIDITY

William A. Bolhofer, Frederick, and John J. Baldwin, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 28, 1966, Ser. No. 605,207

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 14 Claims

There is disclosed a method of treating gastric hyperacidity with 2,3-dichloroquinoxalines wherein the 6-position of the quinoxaline ring contains a sulfamoyl or substituted sulfamoyl radical and the 7-position may be substituted with chlorine, a loweralkyl or loweralkoxy substituent. Formulations containing these substances as active ingredients are also disclosed.

3,574,839

BASICALLY SUBSTITUTED ALKOXY ANTHRANILAMIDES, THEIR CORRESPONDING 2-NITRO COMPOUNDS, AND DERIVATIVES THEREOF

Edgar S. Schipper, Highland Park, and Paul Levitan, West New York, N.J., assignors to Shulton, Inc., Clifton, N.J.

No Drawing. Original application Oct. 11, 1966, Ser. No. 585,748, now Patent No. 3,488,352, dated Jan. 6, 1970. Divided and this application May 16, 1969, Ser. No. 842,056

Int. Cl. A61v *27/00*

U.S. Cl. 424—250 6 Claims

Certain N-piperazino-o-nitro- and o-amino-anthranilamides are disclosed. The compounds are useful in antipsychotic applications and as sedatives and tranquilizers.

3,574,840

ANALGESIC, ANTITHERMIC AND ANTI-INFLAMMATORY TABLETS AND METHODS WITH 2-PHENYL - 7 - BROMO-QUINOLINE - 4 - CARBOXYLIC ACID OR SALTS THEREOF

Eugene Riviere, Issy-les-Mouleneaux, and Roger Lucien Debrie, Brenouille, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,646

Claims priority, application France, Oct. 31, 1967, 126,509

Int. Cl. A61v *27/00*

U.S. Cl. 424—258 4 Claims

The present invention provides a process for the treatment of algesic, thermic and inflammatory manifestations in mammals which comprises administering to the mammal 2 - phenyl - 6 - bromo - quinoline-4-carboxylic acid or the sodium or magnesium salt thereof. The present invention also provides a composition comprising 2-phenyl - 6 - bromo - quinoline - 4 - carboxylic acid or the sodium or magnesium salt thereof and a pharmaceutically acceptable carrier.

3,574,841

FUNGICIDAL METHODS USING SUBSTITUTED NITROPYRIDINES

Patrick Robert Driscoll, Fords, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Mar. 5, 1968, Ser. No. 710,672

Int. Cl. A01n *9/00*

U.S. Cl. 424—263 6 Claims

Compositions of substituted mono- and di-nitropyridines on a carrier therefor are effective in combatting fungi. Some are effective against plant fungi, while others are effective against soil fungi. Some are effective against both types.

3,574,842

COMPOSITIONS OF 4-(1,2,4-OXADIAZOLE-3 OR 5-YL)PYRIDINIUM SALTS AND METHOD OF LOWERING BLOOD SUGAR LEVELS WITH SAME

Victor John Bauer, Montvale, N.J., William Joseph Fanshawe, Pearl River, N.Y., and Sidney Robert Safir, River Edge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 676,706, Oct. 20, 1967. This application Nov. 10, 1969, Ser. No. 875,529

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 10 Claims

Compositions containing quaternary 1,2,4-oxadiazolylpyridinium salts are described along with methods of using the same. These active components show hypoglycemic activity evidenced by their ability to lower blood sugar levels.

3,574,843

1,4-DIHYDROPYRIDINE DERIVATIVES FOR THE TREATMENT OF ANGINA PECTORIS

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Mar. 14, 1968, Ser. No. 712,909, now Patent No. 3,488,359, dated Jan. 6, 1970. Divided and this application May 29, 1969, Ser. No. 830,218

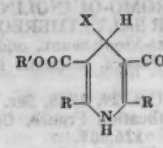
Claims priority, application Germany, Mar. 20, 1967, F 51,878

Int. Cl. A61k *27/00*

U.S. Cl. 424—266 8 Claims

Pharmaceutical compositions for the treatment or prophylactic prevention of coronary insufficiency and

angina pectoris in which the active therapeutic agent is a 1,4-dihydropyridine derivative of the formula:



wherein:

R is hydrogen or alkyl of 1 to 3 carbon atoms,
R' is lower alkoxy lower alkyl, hydroxy lower alkyl, furfuryl or tetrahydrofurfuryl, and
X is pyridyl, phenyl, or nitrophenyl,

or a pharmaceutically acceptable non-toxic salt thereof in combination with a pharmaceutically acceptable non-toxic carrier. Said 1,4-dihydropyridines or pharmaceutically acceptable non-toxic salts thereof are administered to humans.

3,574,844

4-[4(OR 5)-IMIDAZOLYLMETHYL]-OXAZOLES

Joseph Francis Gardocki, Doylestown, Pa., Edward Ervin Smissman, Lawrence, Kans., and Joseph Albert Meschino, North Wales, Pa., assignors to McNeil Laboratories, Inc.

No Drawing. Filed Mar. 12, 1969, Ser. No. 806,679

Int. Cl. A61k *27/00*

U.S. Cl. 424—272 **10 Claims**

4-[4(or 5)-imidazolylmethyl]-oxazole derivatives and compositions useful for their analgesic activity, and method of using same.

3,574,845

ANTHELMINTIC COMPOSITIONS AND METHODS EMPLOYING ESTERS OF BENZIMIDAZOLYL CARBAMIC ACIDS AND THEIR THIO ANALOGS

Philip Paul Actor, Phoenixville, and Joseph Frank Pagano, Paoli, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of applications Ser. No. 387,524, Aug. 4, 1964, and Ser. No. 516,120, Dec. 23, 1965. This application July 1, 1966, Ser. No. 562,117

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **16 Claims**

Anthelmintic compositions comprising esters of benzimidazolyl carbamic acids, and their thio analogs, both of which may be optionally substituted on the benzene ring, are disclosed. A process for their preparation involves reacting cyanamide in a suitable organic solvent with the appropriae alkyl substituted haloformate to form a cyanocarbamate, followed by the addition of an o-phenylenediamine to yield the described anthelmintic agents.

3,574,846

STABILIZATION OF HEXAMETHYLDITIN WITH 2,6-DITERTIARY-BUTYL-4-METHYL PHENOL

Herbert Q. Smith, King of Prussia, and Edward Everett Ivy, Devon, Pa., assignors to Pennwalt Corporation

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,834

Int. Cl. A01n *9/00*

U.S. Cl. 424—288 **6 Claims**

A stabilized insecticidal composition comprising hexamethylditin and a stabilizing amount of 2,6-ditertiary-butyl-4-methyl phenol.

3,574,847

NEW ALKYL 2-METHYLPROPENYL KETOXIME CARBAMATES AS INSECTICIDES

Alan R. Friedman, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Dec. 22, 1966, Ser. No. 603,752, now Patent No. 3,454,642. Divided and this application Feb. 17, 1969, Ser. No. 800,004

Int. Cl. A01n *9/20*

U.S. Cl. 424—300 **6 Claims**

New alkyl 2-methylpropenyl ketoxime carbamates are active against insects, e.g., houseflies, boll weevils, Mexican bean bettles, and house crickets—also other insect pests. The α- or azomethine carbon has a methyl, an ethyl, a propyl, or an isopropyl substituent. The carbamate nitrogen may be unsubstituted or mono-lower-alkyl substituted. The anti-methyl syn-2-methylpropenyl isomer appears to be more active than the anti-podal syn-methyl anti-2-methylpropenyl isomer.

3,574,848

METHODS OF KILLING FUNGI WITH THE DIESTER OF 2,2,4-TRIMETHYLPENTANEDIOL-1,3

Harald Schnegelberger, Hilden-Rhineland, and Horst Bellinger, Dusseldorf, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed June 11, 1968, Ser. No. 735,981

Claims priority, application Germany, June 22, 1967, H 63,078

Int. Cl. A01n *9/24*

U.S. Cl. 424—311 **4 Claims**

Fungicidal compositions and method of killing fungi in which the active ingredient is a diester of 2,2,4-trimethylpentanediol-1,3 and aliphatic carboxylic acids of 2 to 12 carbon atoms.

3,574,849

BIS-(p-CHLOROPHENOXY)ACETIC ACID IN COMPOSITIONS AND METHODS FOR TREATING HYPERCHOLESTEREMIA

Rudolf G. Griot, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 560,874, June 27, 1966. This application Nov. 13, 1967, Ser. No. 682,647

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **12 Claims**

This disclosure relates to derivatives of acetic acid, e.g., bis-(p-chlorophenoxy)acetic acid isopropyl ester. These compounds are useful as hypocholesteremics/hypolipemics.

3,574,850

MEDICAMENT HAVING PARTICULARLY AN ANTIFUNGAL BACTERICIDAL AND BACTERIOSTATIC ACTIVITY

Claude R. Guillon, Paris, France, assignor to Expanscience, Courbevoie, Hauts-de-Seine, France

No Drawing. Continuation of application Ser. No. 704,946, Feb. 12, 1968. This application Oct. 7, 1969, Ser. No. 871,753

Claims priority, application France, Oct. 6, 1964, 990,499

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **1 Claim**

An antiseptic composition comprising an aqueous solution of dodecyloxypropylamine-β-butyric acid, dodecylaminopropylamino-β-butyric acid and an alkyl dimethyl

benzyl ammonium chloride, said alkyl having from 8 to 18 carbon atoms, in a weight ratio of 1 to 1 to 0.5, in a pharmacological solvent medium. The antiseptic composition of the invention has an antifungicidal, bactericidal and bacteriostatic activity.

3,574,851

FUNGICIDAL METHOD EMPLOYING NEW QUATERNARY AMMONIUM HALIDES

Asher A. Hyatt, Lexington, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Original application Dec. 3, 1965, Ser. No. 531,320, now Patent No. 3,390,178, dated June 25, 1968. Divided and this application Dec. 20, 1967, Ser. No. 721,893

Int. Cl. A01n *9/20*

U.S. Cl. 424—329 **2 Claims**

A method of controlling soil fungi employing certain new nitroso substituted aryl derivatives of trialkyl ammonium halides.

3,574,852

TREATING DEPRESSION WITH THE N-OXIDE OF N-(3' - DIMETHYLAMINO PROPYL)-IMINODIBENZYL

Hjarne Dyrsting, Virum, and Jorgen Brix Pedersen, Hvidovre, Denmark, assignors to A/S Dumex (Dumex Ltd.), Copenhagen, Denmark

No Drawing. Continuation-in-part of application Ser. No. 581,729, Sept. 26, 1966, which is a continuation-in-part of application Ser. No. 267,839, Mar. 25, 1963. This application Aug. 11, 1969, Ser. No. 849,215

Claims priority, application Great Britain, Mar. 27, 1962, 11,680/62; Feb. 5, 1963, 4,670/63

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **5 Claims**

The compound, N-oxide of N-(3'-dimethylaminopropyl)-iminodibenzyl and the pharmaceutically acceptable, non-toxic acid addition salts thereof possessing antidepressant activity and reduced untoward side effects, and which may be administered to animals for such purposes.

3,574,853

COMPOSITION AND METHOD OF REDUCING SERUM CHOLESTEROL WITH THIOBISCRESOLS

James W. Barnhart, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 11, 1967, Ser. No. 637,633

Int. Cl. A61k *27/00*

U.S. Cl. 424—337 **10 Claims**

Methods useful for lowering serum cholesterol in animals comprising administration to the animal of a hypocholesteremic amount of a thiobis(butylcresol) compound such as α,α'-thiobis(2,6-di-tert-butyl-p-cresol), and compositions to be employed in practicing the method.

3,574,854

METHOD FOR SOOTHING THE SKIN WITH A CREAM CONTAINING SODIUM CHLORIDE

Francois J. Bossard, 33 Boulevard Malesherbes, Paris, France

No Drawing. Filed Mar. 20, 1967, Ser. No. 624,183

Claims priority, application France, Mar. 22, 1966, 54,428

Int. Cl. A61k *71/00*

U.S. Cl. 424—357 **1 Claim**

A process for soothing the skin with a cosmetic consisting of a paste or cream comprising a hypertonic aqueous solution of sodium chloride in a colloidal silica carrier.

3,574,855

SYNERGISTIC WOOD PRESERVATIVE COMPOSITIONS

Frederick Leroy Brown, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 2, 1966, Ser. No. 576,861

Int. Cl. A01n *9/22, 9/26*

U.S. Cl. 424—263 **3 Claims**

Synergistic mixtures of 96 to 25 weight parts of (A) pentachlorophenol or an alkali metal salt thereof and 4 to 75 weight parts of (B) 2,3,5-trichloro-4-(methylsulfonyl)pyridine or 2,3,5,6-tetrachloro-4-(methylsulfonyl)pyridine. The mixtures are useful in protecting wood against decay, degradation and staining caused by microorganisms, and give better protection than either of the components when employed alone.

3,574,856

METHOD OF PREVENTING AND CONTROLLING COCCIDIOSIS WITH SYDNONE DERIVATIVES

Philip M. Weintraub, Charles O. Baughn, Jr., and Ronald E. Bambury, Ashland, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,500

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **2 Claims**

The mortality of chicks which become infected with *Eimeria tenella* is reduced when 3-arylsydnones are incorporated in their diets in amounts of from 10 to 400 parts per million by weight. Compositions containing these 3-arylsydnones and methods of using them in preventing and controlling coccidiosis are disclosed.

3,574,857

ANTILIPIDEMIC METHODS USING GLUTAMIC ACID, THREONINE AND PROLINE

William H. Cevallos, Devon, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,943

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **5 Claims**

Methods of producing hypolipidemic activity in subjects having abnormally high levels of lipids (cholesterol) in the blood stream using a combination of glutamic acid and threonine administered internally in quantities greater than present in the suject's normal diet. Proline may also be added.

3,574,858

MICROBIOCIDE FOR CONTROLLING BACTERIA IN WATER

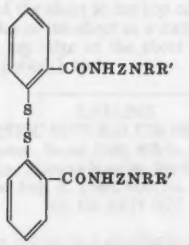
Gert P. Volpp, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed July 9, 1968, Ser. No. 743,296

Int. Cl. A01n *9/12*

U.S. Cl. 424—324 **6 Claims**

Slime formation in paper pulp is controlled by adding to pulp liquors a compound of the formula



wherein each of R and R' represent lower alkyl groups and Z is an alkylene group of 2 to 7 carbon atoms.

3,574,859

PROCESS FOR THE TREATMENT OF HYPERTROPHIED GUMS

Carl M. Kosti, 704 Foxhall Road, Bloomfield Hills, Mich. 48013

No Drawing. Continuation-in-part of application Ser. No. 742,535, July 5, 1968. This application June 2, 1969, Ser. No. 829,793

Int. Cl. A61k 5/00, 7/16, 27/00

U.S. Cl. 424—330 8 Claims

A process and composition for the treatment of hypertrophied and hyperplastic gums; alkaloids such as sympathomimetic amines which are vasoconstrictors, applied to the gums as a rinse or coating, for instance by an atomizer, by swabbing or through a toothpaste containing containing the same, for effective vasoconstriction of the gums.

3,574,860

MEDICAMENTS COATED WITH SODIUM ETHYL CELLULOSE SULFATE

Richard R. Crawford and Peter M. Grant, both of 755 Ridge Road W. 14615, and Martin E. Rowley and Walter D. Slowig, both of 1669 Lake Ave. 14614, all of Rochester, N.Y.

No Drawing. Filed Mar. 25, 1966, Ser. No. 544,335

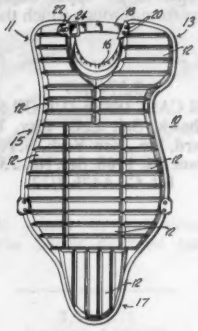
Int. Cl. A61k 27/00

U.S. Cl. 424—362 3 Claims

A medicament is surrounded by a layer of sodium ethyl cellulose sulfate, with or without a different cellulose derivative and/or a plasticizer. This new composition provides a coating which is glossy, smooth and hard, which is less bulky than sugar, and which disintegrates rapidly in gastric fluids of the stomach. The rate of disintegration in gastric fluids can be controlled by tailoring compositions with different percentages of ingredients for different rates of disintegration.

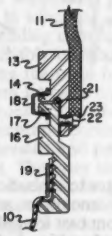
GENERAL AND MECHANICAL

3,574,861
CHEST AND THROAT PROTECTOR
Creighton J. Hale, Williamsport, Pa., assignor to Little League Baseball Inc.
Filed July 12, 1968, Ser. No. 744,426
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 **6 Claims**



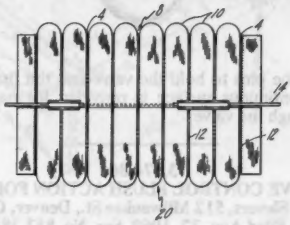
The chest protector is provided with a collar portion which is designed to conform to the outline of the wearer's throat. Rising from the collar portion is a throat protector comprising a padded segment designed to cover the throat of the wearer. A strap which is detachable at at least one end extends across the rearward open end of the collar portion so as to prevent the protector from sliding downward while in use and thus exposing the throat of the wearer.

3,574,862
CONNECTOR FOR DIVER'S HELMET
Richard F. Jones, Santa Barbara, Calif., assignor to Agonic Engineering, Inc., Santa Barbara, Calif.
Filed May 31, 1968, Ser. No. 733,424
Int. Cl. A62b *17/00*
U.S. Cl. 2—2.1 **5 Claims**



A ring is fitted over the neck of a diver's suit, and the rubber suit of the diver is connected to the bottom part with a watertight joint, and a removable helmet is disposed on the upper part of the ring with a watertight joint. A band of V-shaped cross section holds the helmet to the ring, and a manually operated latch mechanism tightens the band to hold the helmet to the neck ring or loosens the band for removal of the helmet. The latch has over-the-center locking, and in addition, has a double safety catch to keep it from being accidentally opened if the latch is subjected to blows or strikes equipment under water.

3,574,863
CONVOLUTE SECTION
John J. Korabowski, Springfield, Mass., and Edwin G. Vail, Simsbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 20, 1968, Ser. No. 785,617
Int. Cl. A62b *17/00*
U.S. Cl. 2—2.1 **1 Claim**



A convolute section for use in a pressure suit has adjustable root cords slidably attached to the restraint cloth by stitching, preferably by zigzag stitching.

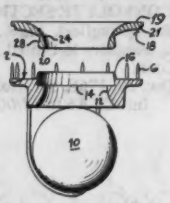
3,574,864
DISPOSABLE HOSPITAL PATIENT'S GOWN WITH COHESIVE
Theodore Bradley, 147 Eldorado St., Monterey, Calif. 93940
Continuation-in-part of application Ser. No. 534,903, Mar. 16, 1966, now Patent No. 3,451,062. This application Mar. 12, 1969, Ser. No. 828,407
Int. Cl. A41d *9/00*
U.S. Cl. 2—114 **4 Claims**

Disposable examination gown featuring a single sheet of disposable material, cutout neck area, slits defining arm openings, a cohesive-adhesive of low peel adhesive adherence and high shear adhesive adherence applied to opposed areas of the sheet at the top edge adjacent the neck area and the sides of the sheet as a means for separating and reattaching the top edge of the sheet and the sides of the sheet about the patient's body.

3,574,865
PROSTHETIC SUTURELESS HEART VALVE
Ronald C. Hamaker, Royal Oak, Mich., assignor to Michigan Instruments, Inc., Grand Rapids, Mich.
Filed Aug. 8, 1968, Ser. No. 751,210
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 **8 Claims**

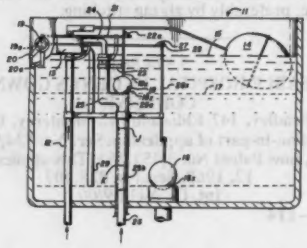
This disclosure relates to a prosthetic sutureless heart valve wherein a two-piece snapring is employed in fastening the

valve to the heart. The valve has an annular base which contains a check valve and a plurality of pins which pierce the tissue around the valve. The annular snapring fits into the



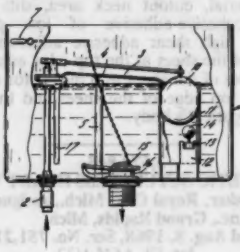
base near the pins to hold the valve and the tissue intact. A smooth, continuous surface is provided for passage of the blood through the valve.

3,574,866
SELECTIVE CONTROL FLUSH ACTION FOR TOILETS
William O. Sievers, 512 Milwaukee St., Denver, Colo.
Filed Aug. 27, 1969, Ser. No. 853,385
Int. Cl. E03d *3/00*
U.S. Cl. 4—34 **2 Claims**



Watersaving flush valve controls for toilets having two different capacity discharges from a reservoir. Said control having one opening and valve for lesser capacity outlet when lesser quantity discharge is required and another for using a greater capacity outlet when full discharge is required. Each control is selective and will terminate discharge action after selected discharge.

3,574,867
CONTROL FOR A WATER CLOSET
Frank D. Biniores, 7817 Arch St., Little Rock, Ark.
Filed Dec. 16, 1969, Ser. No. 885,554
Int. Cl. E03d *1/22, 1/00*
U.S. Cl. 4—41 **6 Claims**

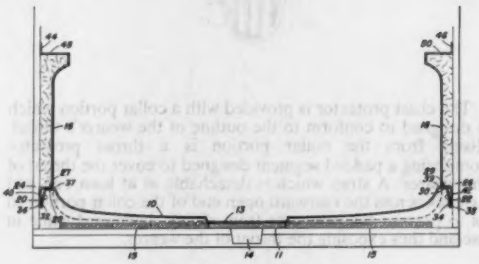


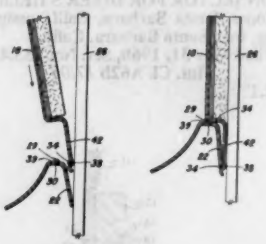
Water closet supply tanks of the type embodying a float regulating the water supply, according as the level of water rises in said tank. Particularly, a control tank positioned within said water tank, so as to encompass the float and ensure cutting off of the water supply if the discharge valve remains open in the water tank.

3,574,868
DRAINAGE BAG TUBE STABILIZER
Daniel M. McWhorter, Arlington Heights, Ill., assignor to The Kendall Company, Boston, Mass.
Filed May 20, 1968, Ser. No. 730,302
Int. Cl. A61g *9/00*
U.S. Cl. 4—110 **1 Claim**

A drainage bag for collecting urine is provided with a plastic tab connected to its upper edge, said tab being provided with an aperture through which the drainage tube is threaded.

3,574,869
SURROUND FOR CAST IRON TUB OR SHOWER BASE
Norman Van Skyhawk, Salt Lake City, Utah, assignor to American Standard, Inc., New York, N.Y.
Filed June 24, 1968, Ser. No. 739,382
Int. Cl. A47k *3/22*
U.S. Cl. 4—148 **8 Claims**





This invention relates to a plastic shower surround forming a watertight shower enclosure around a separate tub or shower base made from cast iron, sheet metal or other material, and to a method of making and shipping the components thereof. This enclosure can be shipped knocked down and when assembled improved watertight self-locking snap joints are locked together into the sections which make the shower and tub or shower base a unitary structure.

3,574,870
TANK STRUCTURE
Robert Pitkin Orelind, Wilmette, Ill., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed May 27, 1968, Ser. No. 732,260
Int. Cl. E04h *3/18*
U.S. Cl. 4—172.19 **12 Claims**

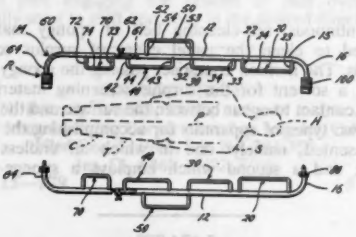
A lightweight, strong tank structure, primarily suited for use as an aboveground swimming pool, wherein the wall

surrounding the liquid-containing area is made principally of a light metal and has a box-shaped cross section formed by corrugated panels joined by extrusions and with the corrugations of the panels disposed transversely of the panels.

3,574,871
SAFETY LITTER

William L. Greene, 419 29 St., Beaumont, Tex. 77707

Filed Oct. 29, 1968, Ser. No. 771,477
Int. Cl. A61g 7/10, 1/02
U.S. Cl. 5—82 14 Claims



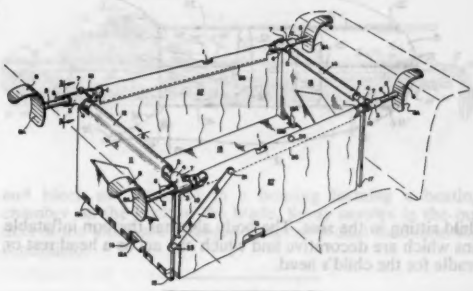
A litter for lifting and supporting an injured person in substantially the position in which he is found comprising a pair of longitudinally extending complementary main frame members which are detachably connected together at each end to facilitate positioning the main frame members under the person by moving them laterally together from opposite sides of his body so as to connect the ends of the frames. The main frame includes central portions disposed in a longitudinal plane with elevated end portions for supporting the person's head and feet. The litter also includes U-shaped brackets, curved in an arc from the longitudinal plane of the central portion to the plane of the elevated portion which brackets can easily be slipped under a prostrate person's head to support his head and neck in their respective relative positions when the injured person is placed on the litter and when he is subsequently moved about from place to place. Further, the litter of the present invention does not interfere with taking X-rays of the head, neck and spine of a person on the litter.

3,574,872
INFANT'S CAR BED

Paul G. Mattila, Rte. 1, Box 543A, Battleground, Wash.

Filed Jan. 6, 1969, Ser. No. 789,169
Int. Cl. A47d 7/00, 9/00
U.S. Cl. 5—94 2 Claims

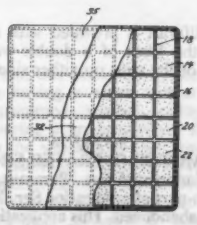
A car bed is disclosed having a rectangular lightweight framework with extensible seat engaging means projecting from each of its corners. Front, rear and bottom walls are of semirigid material hingedly interconnected at their coterminous ends with the front and rear walls being additionally attached to said framework in a hinged manner whereby said walls may be upwardly collapsed against the framework. Yieldable sidewalls permit such collapsing.



3,574,873
FLUID-TYPE SUPPORT STRUCTURE FOR SIMULATING FLOTATION-TYPE SUPPORT

James D. Weinstein, 602 S. Washington Square, Philadelphia, Pa. 19106

Filed May 14, 1968, Ser. No. 728,932
Int. Cl. A47c 27/08
U.S. Cl. 5—348 7 Claims



A cushion is constructed with an internal, soft matrix secured to, and contained within, an elastic and flexible envelope within which a fluid is contained at atmospheric pressure. Over the matrix is placed a cover of a material whose surface has a low coefficient of friction. The foregoing produces, when a person sits on the cushion, a substantially uniform pressure which is sufficiently low, and a resistance to lateral movement of the person sitting on the cushion which is also sufficiently low, to prevent or minimize the formation of decubitus ulcers.

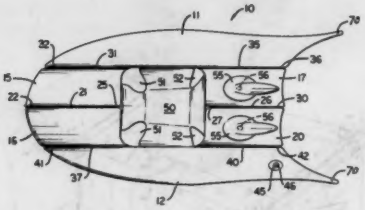
3,574,874
WATER TOY

Charles H. Chafin, 874 Hickory Drive, Ind., and Roy E. McGaffic, 319 Ellenhurst Drive, Anderson, Ind. 46012

Filed Sept. 29, 1969, Ser. No. 861,570
Int. Cl. B63b 7/08
U.S. Cl. 9—2 3 Claims

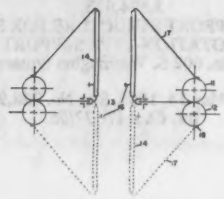
A water toy and float including inflatable pneumatic body made up of tubes which surround and support a flexible seat.

The tubes extend from front to rear and are connected by seams so that the outermost tubes can roll or fold upwardly along the seams to cup around the arms and body of the



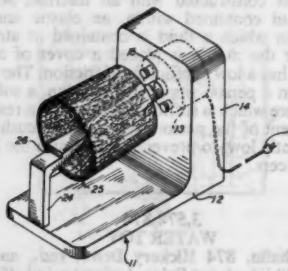
child sitting in the seat. The body also has thereon inflatable fins which are decorative and which can act as a head rest or cradle for the child's head.

3,574,875
LIFERAFT
Arthur George Tulett, Granby, Quebec, Canada (c/o Tul Safety Equipment Ltd., 2240 Beaconsfield Ave., Montreal, Quebec, Canada)
Filed Nov. 25, 1968, Ser. No. 778,460
Int. Cl. B63c 9/04
U.S. Cl. 9—11.1 **3 Claims**



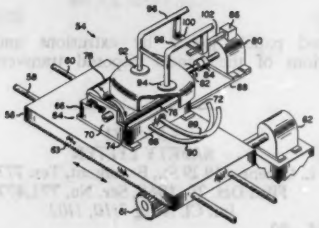
An inflatable liferaft is provided with an inflatable strut. The strut is in the form of a double-walled sleeve which permits erection of the strut on either side of the floor of the raft.

3,574,876
ELECTRIC-MOTOR-OPERATED SHOE POLISHER
Eli Cohen, 350 Continental Ave., Paramus, N.J.
Continuation-in-part of application Ser. No. 632,281, Apr. 20, 1967, now abandoned. This application Oct. 31, 1968, Ser. No. 777,974
Int. Cl. A47l 23/02
U.S. Cl. 15—97 **10 Claims**



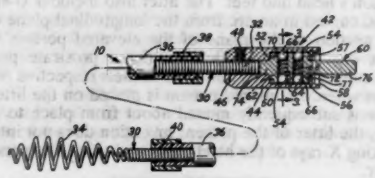
A hollow frame generally cylindrical, but with its outer surface curved axially, a polishing sleeve of fabric fitted over the open end, one end of said sleeve being connected to the central interior portion of the closed end of said frame, means stretching said sleeve and causing an end portion to contract around said closed end toward the axis, said closed end portion being mounted on the output shaft of a motor to be rotated about its axis, and a shelf for supporting a shoe so that said cloth may polishingly engage selected portions of said shoe while being worn.

3,574,877
APPARATUS FOR CLEANING THE FRIT SEAL EDGE OF CATHODE RAY TUBE FACE PANELS
John W. Stetz, Waterloo, N.Y., assignor to Sylvania Electric Products, Inc.
Original application Sept. 24, 1968, Ser. No. 762,028, now abandoned. Divided and this application Jan. 19, 1970, Ser. No. 3,973
Int. Cl. H01j 9/38
U.S. Cl. 15—97 **3 Claims**



A continuous, self-cleaning belt of spongy material is employed to clean the panel edges of surplus screening materials. The method comprises passing the spongy surface through a solvent for the surplus screening materials and causing contact to occur between the surface and the frit seal edge. Two types of apparatus for accomplishing the method are presented, namely: one in which an endless belt is utilized; and a second which employs a sponge-covered roller.

3,574,878
POWER ROOTER WITH SAFETY CLUTCH
Harold Shames, Ardsley; Sidney J. Shames, Briarcliff Manor, N.Y., and John F. Logan, Pequannock, N.J., assignors to said Logan assor. to Melard Manufacturing Corp., Bronx, N.Y.
Filed May 19, 1969, Ser. No. 825,829
Int. Cl. B08b 9/02
U.S. Cl. 15—104.3 **2 Claims**

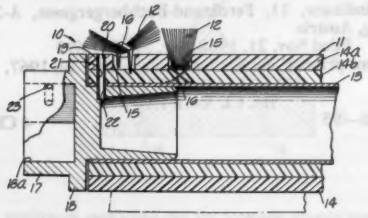


A helical-wire power-driven snake is provided at its drive end with a torque-responsive safety clutch which prevents kinking or snapping of the wire or overloading or burnout of the source of rotary power. Spring-loaded clutch elements cooperating with axial grooves provide for both transmission of rotary motion and selective transmission of thrust from the power tool.

3,574,879
BRUSH AND CASE COMPOUND
Winfried Werding, 25, de Chailly, 1000 Lausanne, Switzerland
Filed July 1, 1969, Ser. No. 838,079
Claims priority, application Switzerland, July 2, 1968, 9884/68
Int. Cl. A46b 17/04
U.S. Cl. 15—184 6 Claims

A toothbrush or the like bristle-carrying body the shank of which is carried by an advantageously tubular rear section inside which it may collapse, the shifting of said body into and out of said rear section being performed frictionally by the throttled part of a case adapted to receive the brush, said throttled part engaging the bristles to ride over them frictionally so as to shift said body in the desired direction.

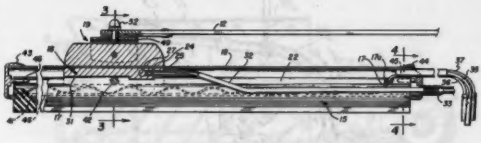
3,574,880
ROTARY BRUSH
Donald N. Butzen, Arcadia, Calif., assignor to Los Angeles Brush Manufacturing Corporation, Los Angeles, Calif.
Filed Dec. 5, 1968, Ser. No. 781,355
Int. Cl. A46b 13/02, 3/16
U.S. Cl. 15—179 5 Claims



A rotary brush for use in cleaning, drying and polishing produce comprising a core with filament extending therefrom and adapted to be arranged in a substantially horizontal plane laterally adjacent a plurality of similar brushes.

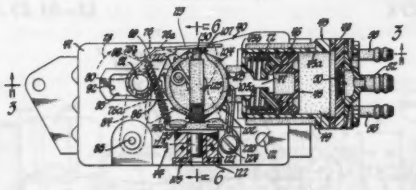
3,574,881
HEATED WINDSHIELD WIPER-SPRAY ASSEMBLY
Reinhold Temple, 710 Dahlia, Denver, Colo. 80220
Filed June 16, 1969, Ser. No. 833,435
Int. Cl. B60s 1/46
U.S. Cl. 15—250.04 13 Claims

A heated windshield wiper-spray device is suited for cleaning the windshield and removing ice from the wiper blade of a vehicle during subfreezing temperatures and snow and sleet conditions and includes a fluid heating block and a heating element, preferably an electric resistance wire on the wiper blade, to move conjointly with the blade as it wipes back and forth across the windshield. The heating element



and block are enclosed in a housing forming a heating chamber on the back of the blade. Spray nozzles in the outlets of the block are arranged to spray heated fluid onto the windshield.

3,574,882
WINDSHIELD WASHER PUMP ASSEMBLY
Ronald G. Petry, Xenia, and Ralph W. Edwards, Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed July 30, 1969, Ser. No. 846,068
Int. Cl. A47i 1/00
U.S. Cl. 15—250.02 9 Claims

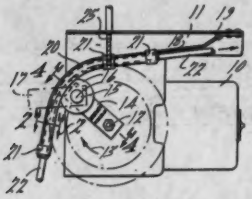


In a preferred form, this disclosure relates to a windshield cleaning apparatus having a wiper unit and a washer unit including a programmed washer pump assembly for intermittently delivering a predetermined number of squirts of washing fluid to the windshield each time it is energized. The washer pump assembly includes a reciprocable pump having a spring-actuated delivery stroke and an interruptible driving connection with a wiper unit motor. The washer pump assembly further includes a control and timer mechanism which is operable, when momentarily energized, to establish a driving connection between the pump and the wiper unit motor for a predetermined number of wiper strokes and then to automatically and abruptly interrupt the driving connection therebetween. The washer pump assembly is also operably to deliver a squirt of washer fluid to the windshield prior to the wipers of the wiper unit having moved very far from their parked position when both units are simultaneously energized.

3,574,883
WINDSHIELD CLEANSING SYSTEM
William James Brittain, Southend, Essex; Jaan Lindre, Benfleet, Essex, and Kenneth Stone, Chelmsford, Essex, England, assignors to Ford Motor Company, Dearborn, Mich.
Filed July 30, 1969, Ser. No. 846,122
Claims priority, application Great Britain, Dec. 31, 1968, 61796/68
Int. Cl. B60s 1/46
U.S. Cl. 15—250.02 8 Claims

A windshield cleansing system utilizing a peristaltic pump device in which a roller mounted on an element of the windshield wiper operating linkage intermittently engages

and rolls along a tube having resilient walls. The relationship of the roller and the tube are controllable so that the tube can be cyclically compressed by the roller to cause windshield wiper solvent to be pumped to and discharged

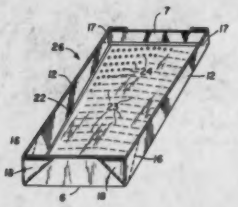


from a washer jet. The cyclical compression of the tube and resultant discharge of the washer solvent is correlated with the movements of the wiper blades across the windshield surface.

3,574,884
DISPOSABLE TRAY WITH STEEL FOIL INSIDE BOTTOM

Charles E. Palmer, Somers, Conn., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1967, Ser. No. 621,670
Int. Cl. B44d *3/12*
U.S. Cl. 15—257.06 2 Claims

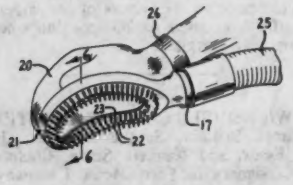


Paint roller loading trays or pans constructed of liquid impermeable paperboard, plastic or other nonporous material and having steel foil inside bottoms are provided.

3,574,885
PET BRUSH

Genevieve M. Jones, 10840 S.E. 85th Ave., Portland, Oreg.

Filed Apr. 1, 1969, Ser. No. 811,796
Int. Cl. A47l *9/06*
U.S. Cl. 15—393 2 Claims

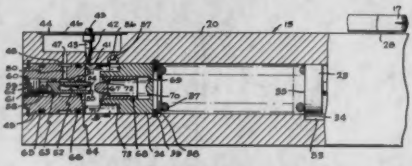


A brush having flexible plastic bristles and adapted for connection with a vacuum cleaner to remove loose hair dislodged in brushing an animal. In a modification, the brush is incorporated in a mitt to receive the operator's hand and the body of the brush is pliable so that it may be curved to correspond to the surface being brushed.

3,574,886
POSITION CONTROL HYDRAULIC SNUBBER

George B. Solovieff, San Clemente, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed July 10, 1969, Ser. No. 840,631
Int. Cl. E05f *3/12*
U.S. Cl. 16—51 9 Claims

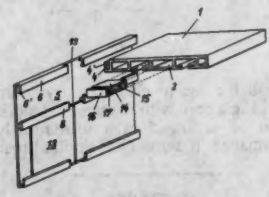


A hydraulic snubber for such use as a door closer in which a main piston connected to an actuator arm slides in a main chamber containing a bypass which, once passed, allows hydraulic liquid to be trapped ahead of the main piston and then actuate a control piston which is reciprocated in a control chamber. From the control chamber there are paths through which hydraulic fluid can flow to a reservoir. One path is an unrestricted passage and the other path is a restricted passage. During part of the movement cycle of the control piston, the hydraulic fluid flows freely through the unrestricted passage until a valve element carried by a separate resiliently mounted shutoff piston closes the unrestricted passage. At this point hydraulic fluid is forced through the restricted passage to the reservoir and retards movement of the control piston, which continues to move relative to the shutoff piston because of the resilient connection between them. Movement of the control piston finally stops when it bottoms against the stationary end of the control chamber. Upon the return cycle, hydraulic fluid first flows freely from the reservoir through the check valve passage to the control chamber while the shutoff valve remains closed and later, when the shutoff valve is opened, the hydraulic liquid also flows freely from the reservoir through the corresponding passage and shutoff valve seat into the control chamber.

3,574,887
CURTAIN HOLDER

Karl Schindlauer, 11, Ferdinand-Buchbergergasse, A-2340 Modling, Austria

Filed Nov. 21, 1968, Ser. No. 777,699
Claims priority, application Austria, Dec. 20, 1967, A11493/67
Int. Cl. A47h *1/04*
U.S. Cl. 16—95 4 Claims

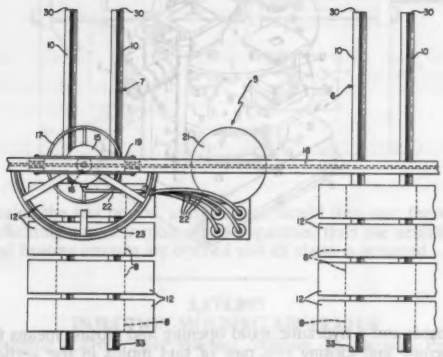


The invention includes a curtain holder having running slots for gliders. The holder incorporates a face panel for hiding the upper portion of the curtains and gliders. This face panel is removably attached to the holder by a snap-joint fit. The face panel can also be applied to the ends of the holder, and friction insert means are used to assist in attaching the ends of the face panel to the holder.

3,574,888
FOAM MOLDING APPARATUS

Jack E. Holaday, Logan, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 27, 1968, Ser. No. 779,415
Int. Cl. B29c 3/06, 1/00; B65b 43/52
U.S. Cl. 18—4 2 Claims

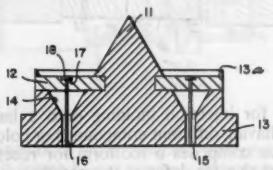


This invention relates to an apparatus for producing molded foam articles having a conveyor system to move a series of molds from a stripping station through a filling station and then return the mold to the stripping station with the foaming apparatus being suspended above the filling station and being movable to another filling station while the molds are being returned to their original position.

3,574,889
MULTIPORT EXTRUDING DIE

Charles H. Hire, Ridgecrest, and Elmer J. Rhyn, China Lake, Calif.

Filed Nov. 18, 1968, Ser. No. 776,448
Int. Cl. D01d
U.S. Cl. 18—8 2 Claims



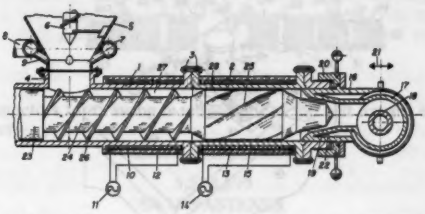
A multiport extruding die for forming plastic material into tubular shape; said die provided with a plurality of ports of predetermined dimensions having a spring steel stake or mandrel positioned centrally in each port. In operation the material is extruded or squeezed through the port around the mandrel or stake thereby forming a plurality of tubules in a single operation; each tube having a uniform central perforation and uniform wall thickness.

3,574,890
COMBINED HEATING AND MIXING APPARATUS

Walter Gresch, Lachmattser. 55, Muttenz, Switzerland

Filed July 28, 1967, Ser. No. 656,714
Int. Cl. B29f 3/06
U.S. Cl. 18—12 2 Claims

Apparatus for carrying out high-temperature processes during extrusion and comprising an elongated housing having an inlet and an outlet and screw means in the housing and having a first kneading and mixing screw portion adjacent the inlet and a coaxial second portion adjacent the outlet and having a larger pitch and a smaller screw depth than the first portion. The apparatus includes further heating means

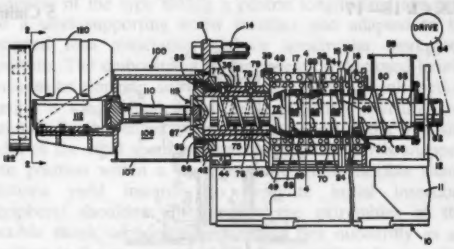


surrounding the housing at least in the region of the second screw portion and adjustable throttling means in the region of the outlet.

3,574,891
MECHANICAL SCREW PRESS

Dean K. Bredeson, and Robert Kent Slaby, Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Aug. 19, 1968, Ser. No. 753,647
Int. Cl. B29f 3/02
U.S. Cl. 18—12 3 Claims



A screw press has a drainage cage section connected to a smaller solid cage section which forms the discharge end. A screw having interrupted flights extends within the cage sections and has its feed end connected to a drive and its discharge end rotatably supported by the solid cage section. A die plate is mounted on the discharge end of the cage adjacent the discharge end of the screw, and a pivotable housing supports a motor-driven cutter for movement between an operable position adjacent the die plate and a retracted position which permits convenient access to the cutter and die plate.

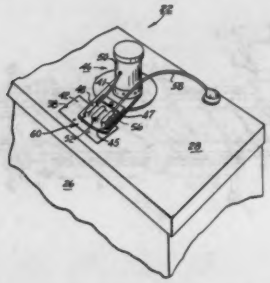
3,574,892
POWDER COMPACTING PRESS

Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Jan. 27, 1969, Ser. No. 794,196
Int. Cl. B30b 7/00, 11/04
U.S. Cl. 18—16 8 Claims

A punch and die assembly and work station positioner for a powder-compacting press including a die plate and a tool capsule containing a punch or punches for reciprocation therein which is formed as a unit with the die plate and a multiple work station positioner assembly angularly movably

positioned over the die plate, the die plate being provided with a plurality of substantially linearly arranged die cavities adapted to be filled with powdered material in a first position of the work station positioner and for receipt of similarly arranged punches to compress the powder between the



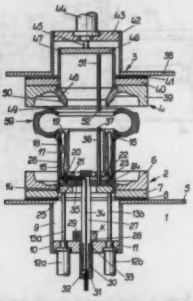
punches and an anvil in a second position of the work station positioner, and to eject the compressed articles from the die cavities in a third position of the work station positioner for discharge through similar linearly arranged discharge apertures in the first position of the work station positioner.

3,574,893

TIRE-VULCANIZING PRESS

Walter Balle, Dornigheim, and Gunter Pommer, Frankfurt am Main, Germany, assignors to Leonhard Herbert Maschinenfabrik

Filed May 16, 1969, Ser. No. 825,168
Claims priority, application Germany, May 17, 1968, P 17 78 615.1
Int. Cl. B29h *5/02*
U.S. Cl. 18—17 **5 Claims**



A tire-vulcanizing press which has particular application to tires of smaller size, e.g. those used for private cars including a heating bag arranged folded double between an inner and an outer cylinder on the lower part of a press, the inner cylinder acting as a bag-guiding cylinder and having means for positioning the cylinder at different levels and the outer cylinder acting to eject a tire from the lower half of a mould, and means on the closing of the press to adjust the height of the inner cylinder and thus the amount of the bag within a tire.

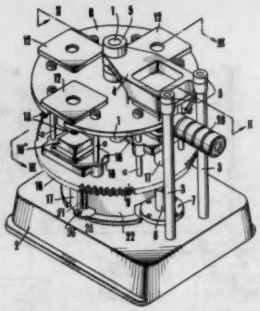
3,574,894

SYNTHETIC RESIN INJECTION MOLDING MACHINE

Katashi Aoki, 6037,Oaza Minamijo,Sakaki-machi, Hanishina-gun, Nagano-ken, Japan

Filed May 27, 1969, Ser. No. 828,288
Claims priority, application Japan, May 31, 1968, 43/36919
Int. Cl. B29c *3/00*
U.S. Cl. 18—20 **7 Claims**

A rotary injection molding machine characterized in that a pair of vertically spaced apart, but unitary connected rotary discs are intermittently rotatably carried by a main shaft of a frame, a plurality pairs of molds are disposed between said pair of rotary discs in equiangularly spaced apart relation with each other in such a manner that they may be opened or



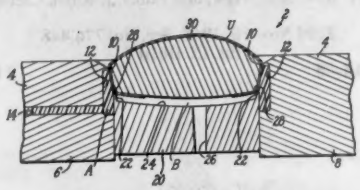
closed; and a hydraulic mold opening and closing means for opening and closing one pair of said molds in the vertical direction when it is held in a stationary position is disposed at one portion of an annular track provided upon said frame.

3,574,895

FOOTWEAR SOLE-INJECTION-MOLDING APPARATUS

Donald B. McIlvin, Danvers, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Dec. 22, 1967, Ser. No. 692,926
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **8 Claims**



Apparatus for injection molding onto a lasted footwear upper a sole having different compounds or colors of plastics. The apparatus comprises a footform for receiving a lasted upper, a mold ring for defining the periphery of the molded sole, and a bottom mold member for defining the bottom of the molded sole. The mold ring is provided with at least one injection passage for the entrance of a first plastic into the mold cavity formed by the footform, mold ring and bottom mold member. The bottom mold member is provided with an injection passage for the entrance of a second plastic. A mold member is further provided with means to segregate the mold cavity zones into which the first and second plastics are injected.

3,574,896

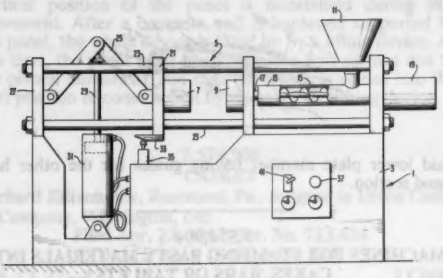
MOLDING APPARATUS

Helmut Fernholz, Wiensenstrasse 2, Meinerzhagen Westfalen, Germany

Filed May 16, 1968, Ser. No. 729,596
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **3 Claims**

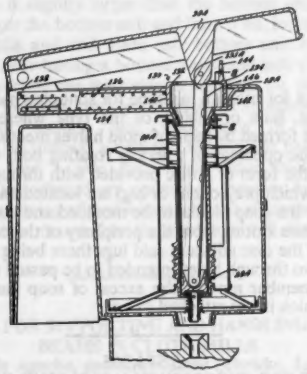
Molding apparatus that operates cyclically and has an operating period and a rest period during each cycle is provided with a pair of timers that are alternately actuated upon movement of a portion of the apparatus through a

reciprocatory path of motion once during one full cycle. One timer thus runs during the operating period and the other



during the rest period; and if either should time out, thereby indicating a malfunction of the apparatus, then the actuating and heating circuits are opened and an alarm is actuated.

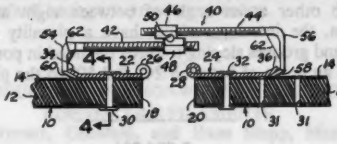
3,574,897
INJECTION-MOLDING APPARATUS
Manning Citron, San Marino; William R. Baynes, Palos Verdes Peninsula, and Dennis H. Merino, Harbor City, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 21, 1969, Ser. No. 809,197
Int. Cl. B29f *1/03, 1/06*
U.S. Cl. 18—30QH **10 Claims**



A simple injection mold machine comprising a heated cylinder that is spring biased upward, away from the mold, a valve at the bottom of the cylinder which is opened by pushing it up, and a piston for moving down in the cylinder. Downward force on the piston moves the cylinder down until the valve abuts the mold and is opened, the piston also supplying force to expel the material out of the cylinder and into the mold. The molds include wells that trap the first-injected material, which may represent the remainder from a previous charge of another color so it does not enter the cavity where useful parts are formed. The molds also include riser passageways that allow the escape of material when the cavity is filled, to indicate this fact.

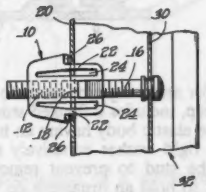
3,574,898
V-BELT TEMPORARY REPAIR KIT
Richard A. Scott, and Clarence E. Rice, Oklahoma City, Okla.
Filed Mar. 25, 1969, Ser. No. 810,317
Int. Cl. F16g *7/04*
U.S. Cl. 24—32 **6 Claims**

A pair of belt end connectors are respectively connected in cooperating relation to opposing ends of a selected length of V-belt forming an endless V-belt replacement. A clamp means is removably engageable with the belt or belt



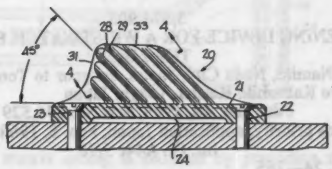
connectors for drawing meeting ends of the belt toward each other.

3,574,899
SNAP FASTENER
Julian V. Fisher, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Sept. 4, 1969, Ser. No. 855,107
Int. Cl. F16b *39/28, 13/06*
U.S. Cl. 24—73 **11 Claims**



The present invention relates generally to one-piece fasteners of the type having a central longitudinal aperture for a work-supporting screw member and adapted to be snapped into association with a noncircular workpiece aperture. The embodiment of the invention disclosed herein includes an elongate, substantially rigid or firm shank section having a longitudinal screw-accommodating aperture and laterally flexible shank sections superimposing the opposite sides of the rigid shank section. As the fastener is snapped into position within a work aperture, these flexible shank sections yield inwardly to facilitate initial insertion, peripheral shoulders intermediate the extremities of the flexible shank sections automatically flex outwardly as an incident to the movement of the shank sections for securing the fastener against axial movement in one direction and other shoulder means secure the fastener against movement in the opposite direction.

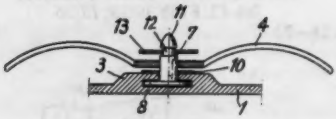
3,574,900
JAMMING CLEAT
Reginald John Emery, 88 Sweet Briar, Welwyn Garden City, England
Continuation-in-part of application Ser. No. 433,317, Feb. 17, 1965, now abandoned. This application Feb. 23, 1968, Ser. No. 707,608
Int. Cl. F16g *11/04*; **A44b** *21/00*
U.S. Cl. 24—130 **10 Claims**



A cleat for securing a line, cable or similar elongated members that has a base with a head and tail end portions. A

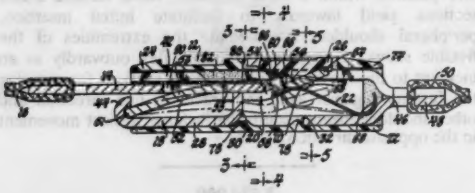
pair of spaced walls are provided which project from the base, and opposing interior surfaces of the walls are inclined away from each other to form a slot to receive and secure an elongated member. The interior surfaces are inclined relative to each other at an angle of between eight and 20°. In addition, the interior surfaces have a plurality of parallel ridges and grooves sloping towards the head in portion of the base at an angle of between 20° and 50° to the plane of the base.

3,574,901
FASTENER FOR ORNAMENTS
Carlos Capella Nogue, Calle Roman Macaya 18, Barcelona 6, Spain
Filed Sept. 15, 1969, Ser. No. 857,918
Claims priority, application Spain, Sept. 17, 1968, 358,568
Int. Cl. A44b *17/00*
U.S. Cl. 24—217 **5 Claims**



A fastener for attaching ornaments to elastic articles, such as a bathing cap, includes a flanged stud received in a blind aperture in the elastic body having an internal cavity for the flange with a rigid washer adhesively secured to the body surrounding the stud to prevent removal thereof, and an elastic washer to hold an ornament on the stud's projecting stem.

3,574,902
PUSHBUTTON BUCKLE
Thomas E. Lohr, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 4, 1969, Ser. No. 855,188
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 **5 Claims**



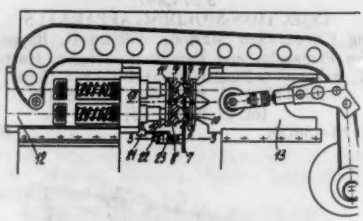
A buckle for releasably holding an apertured latch plate consists of three basic metal members (housing, latch lever, and spring) and two plastic ones pushbutton.) The latch lever is pivotally mounted on an inturned flange on the base of the housing and includes a slot into which a bias spring extends. The pushbutton is movable through an opening in the plastic covering to actuate the latch lever.

3,574,903
FASTENING DEVICE FOR A WRISTWATCH BAND AND THE LIKE
Kouzo Namiki, Noda City, Japan, assignor to Tonan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1969, Ser. No. 794,529
Claims priority, application Japan, Feb. 5, 1968, 43-7399
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 **4 Claims**

A fastening device for a wristwatch band and the like comprising an upper arcuate plate member secured to one half-portion of said band and a lower arcuate plate member connected to said upper plate member, said upper plate member having elastic band engaging and holding means and

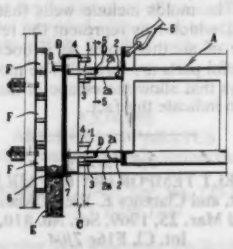
said lower plate member having guides for the other half-band section.

3,574,904
MACHINES FOR STAMPING PASTY MATERIALS INTO CAKES, BARS OR TABLETS
Carlo Mazzoni, Busto Arsizio (Varese), Viale Trentino, Italy
Filed Jan. 25, 1968, Ser. No. 700,416
Claims priority, application Italy, Jan. 27, 1967, 11970/67
Int. Cl. C11d *13/18*
U.S. Cl. 25—7 **4 Claims**



A device for use in a machine for stamping pasty materials into cakes, bars or tablets of the type wherein the soap tablets are formed by pairs of mold halves meeting by passing through the openings of a jerkily rotating box, wherein said box is in the form of a disc provided with through openings, adjacent which projections or lugs are located and adapted to hold both the soap blocks to be moulded and also the excess of soap paste exiting from the periphery of the coupled mold halves, in the disc adjacent said lugs there being prearranged at least two through holes intended to be passed through by a pushing member moving the excess of soap paste from the disc to which it was attached.

3,574,905
DEVICE FOR SUCCESSIVELY BUILDING CONCRETE STRUCTURES
Kao Jing-Hong, No. 17, Chong-cheng, 5 Lane, Kae-Shyuan Ward, Lin-Ya District, Kaohsiung City, China /Taiwan
Filed Dec. 20, 1967, Ser. No. 692,082
Claims priority, application Japan, Dec. 16, 1967, 42/3225
Int. Cl. A61g *17/00*; **B28b** *7/00*
U.S. Cl. 25—131 **3 Claims**



A device comprises a framework and a movable panel attached to at least one side of the framework by movable

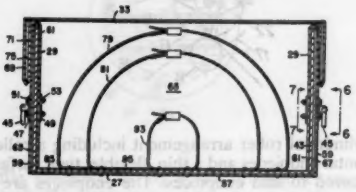
connecting arms. The movable panel is prevented from pivotally moving upward but is permitted to move downward, pivotally supported at supporting points in the arms while the vertical position of the panel is maintained during said movement. After a concrete wall is hardened supported by the panel, the whole device is lifted up by a lifting device. At this time, the panel is set apart from the wall surface due to the pivotal movement, and then the device is placed into the next position of construction by means of the lifting device.

3,574,906

CASKET

Richard Rittenhouse, Rosemont, Pa., assignor to Union Casket Company, Wilmington, Del.

Filed Apr. 23, 1968, Ser. No. 723,454
Int. Cl. A61g 17/00; B65d 5/40
U.S. Cl. 27—4 **2 Claims**



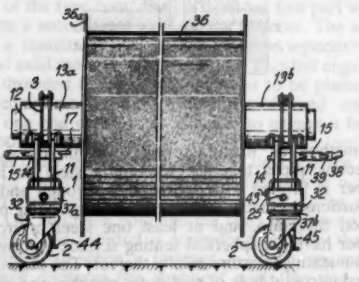
A casket made of paperboard comprising a bottom unit including a bottom wall, sidewalls, and end walls; and a top unit, which is slightly larger than the bottom unit so as to telescope over the bottom unit and form a lid, including a top wall, sidewalls and end walls; said bottom unit including a reinforcing liner having a bottom panel and side panels; and means connecting the liner side panels into the sidewalls of the bottom unit to form a part thereof. The sidewalls of the bottom unit include four thicknesses of corrugated paperboard, as follows: a first and second side panel, a liner side panel, and a side flap. These four thicknesses of corrugated paperboard are connected together by a handle having bolts joining a handle base plate to an anchor plate to an anchor plate mounted on the inside sidewall of the bottom unit.

3,574,907

DEVICE FOR SUPPORTING AND HANDLING WARP BEAMS IN CLOTH MILLS

Jean Camille Agache, and Leon Emile Schricke, La Chapelle D'Armentieres, France, assignors to Anvar Agence Nationale De Valorisation De La Richeiche, Puteaux, Hauts-de-Seine, France

Filed Feb. 26, 1969, Ser. No. 802,598
Int. Cl. D03j 1/00
U.S. Cl. 28—41 **7 Claims**



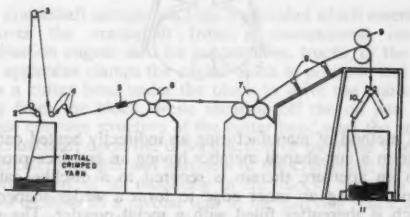
A device for supporting and handling warp beams in cloth mills, comprising, on a rolling compound, two supports for the two warp beam axle-ends respectively, means for rotatably engaging said axle-ends into said supports and means for lowering and raising said supports according to the requirements of each yarn processing station.

3,574,908

PRODUCTION OF A NONWOVEN FLEECE OF CONTINUOUS FILAMENTS

Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, Germany, assignors to Glanzstoff A. G., Wuppertal, Germany

Filed Dec. 26, 1968, Ser. No. 787,013
Claims priority, application Germany, Jan 2, 1968, Jan. 4, 1968, May 22, 1968, G38,682; G38,686; P 17 60 471.6
Int. Cl. D04h 13/00
U.S. Cl. 28—72 **13 Claims**



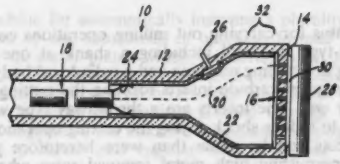
Process for the production of a nonwoven fleece from continuous filaments of a spun and stretched polymer yarn, especially a yarn composed of continuous hollow tubular polyethylene terephthalate filaments, wherein the yarn having permanently crimped filaments with an individual denier of about 0.5 to 20 denier is subjected to a temporary elongation within the range or region of the stress-strain curve which produces an elastic strain but under a load of at least 0.1 grams/denier, the permanent extension or set of the filaments being less than 4 percent, and then releasing the tension on the yarn whereby the crimped structure of the filaments is reformed and the yarn spreads out laterally. The resulting product is useful as a filler material in pillows, quilts, jackets and the like.

3,574,909

METHOD OF REDUCING INTERNAL MATRIX ARCING IN ELECTROSTATIC PRINTING TUBES

Kurt H. Brenner, Jr., Lake Road, R.D. #2, Seneca Falls, N.Y.

Original application Dec. 14, 1967, Ser. No. 690,688, Continuation of application Ser. No. 483,510, Apr. 30, 1965. Divided and this application June 18, 1968, Ser. No. 748,110
Int. Cl. H01j 9/18
U.S. Cl. 29—25.13 **2 Claims**

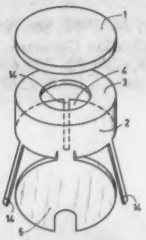


Internal matrix arcing is reduced by providing the tube with an internal electrically conductive coating which is anhydrous or by applying hydrated material and baking it in air to dehydrate the material before the matrix is applied to the tube.

3,574,910
METHOD OF MANUFACTURING AN INDIRECTLY HEATED DISC-LIKE CATHODE AND CATHODE MANUFACTURED BY SAID METHOD

Adrianus Kuiper, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Jan. 3, 1968, Ser. No. 695,410
Claims priority, application Netherlands, Jan. 25, 1967, 6701138
Int. Cl. H01j 9/00
U.S. Cl. 29—25.14 2 Claims

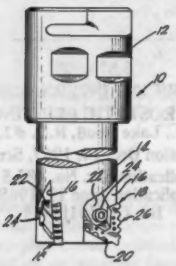


A method of manufacturing an indirectly heated cathode wherein a cup-shaped member having an end face provided with an aperture therein is secured to a disclike cathode support along an inner edge to form a wedge-shaped gap which is thereafter filled with a metal powder. The metal powder is then sintered to provide a thermally conductive body between the heater housing and the cathode disc from which metal particles do not work loose.

3,574,911
CUTTER AND INSERTS THEREFOR

William G. Penoyar, Detroit, Mich., assignor to Milling Specialties, Inc., Detroit, Mich.

Continuation of application Ser. No. 707,679, Feb. 23, 1968, now abandoned. This application Dec. 17, 1969, Ser. No. 885,720
Int. Cl. B26d 1/00, 1/12
U.S. Cl. 29—95 11 Claims

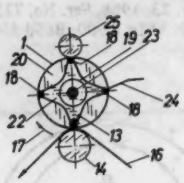


Apparatus for carrying out milling operations comprising an insert-type end mill including a shank at one end for mounting in a milling machine and a cylindrical body portion having tungsten carbide inserts forming the cutting teeth at the other end. The inserts are a throwaway type which are designed to reduce shock during the cutting operation so that deeper cuts can be made than were heretofore practical, thereby permitting high metal removal rates when taking deep cuts as well as in light-facing cuts. The inserts are triangular in shape with each edge being adapted for use as a cutting edge, and each edge being in the form of a modified sign wave so that it is serrated. The waves of each edge are offset or out of phase with the waves of the other two edges so that the peaks of one edge cover the troughs of the other edges. Three such inserts are used, and indicia is present in each insert to enable the operator, when installing the inserts, to properly arrange them so that succeeding inserts around the periphery of the cylindrical body portion of the end mill have different ones of their edges uppermost.

3,574,912
PRESSURIZED CYLINDRICAL ROLLER ARRANGEMENT

Rupert Kraft, 8 Pierlstrasse 9020, Klagenfurt, Austria

Filed July 24, 1968, Ser. No. 747,372
Claims priority, application Austria, July 26, 1967, A6940
Int. Cl. B41i 35/00
U.S. Cl. 29—113 2 Claims

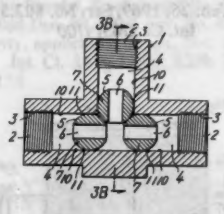


A cylindrical roller arrangement including a roller having two frontal endpieces and a thin, flexible, tight surface closed foil secured to said endpieces. The endpieces are movable relative to one another in axial direction and the axial distance of said endpieces is determined by the surface foil. A part zone of the inner hollow space of the roller adjacent the inside wall of the surface foil as well as the frontal endpieces have the form of a fluid gastight hollow body. The hollow body is filled with a pressure medium exerting a regular pressure on the inside wall of the surface foil as well as on the inside walls of the endpieces. The pressure on the inside walls of the endpieces causes an enlargement of the axial distance of the two endpieces and an axial stretching of the surface foil so that the foil keeps its accurately cylindrical surface.

3,574,913
METHOD OF MANUFACTURING A MANIFOLD COUPLING

Nobuyoshi Saguchi, Tagata-gun, Shizuoka Prefecture, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto-gun, Shizuoka-ken, Japan

[32] Feb. 18, 1967, Apr. 20, 1967, Japan 45/10094 and 45/25422
Original application Sept. 11, 1967, Ser. No. 666,588, now Patent No. 3,526,419. Divided and this application Oct. 23, 1968, Ser. No. 798,824
Int. Cl. B21d 53/00; B23p 15/26
U.S. Cl. 29—157 2 Claims



A method of manufacturing a manifold coupling for connecting pipes together wherein a steel or iron outer member is formed with a hole therethrough and threaded and portions to receive the end of corresponding pipes to be screwed thereinto, and at least one steel or iron seating member having a spherical seating surface is formed with a communicating aperture axially thereof. The seating member is fitted into said hole of said outer member and welded at a portion of its spherical seating surface to the inner sidewall of the outer member by means of a bonding agent applied therebetween. Thus the outer member with the apertured

seating member bonded thereto forms a manifold coupling for connecting fluid pipes together which is free from any leakage of fluid and easy and economical to manufacture.

3,574,914

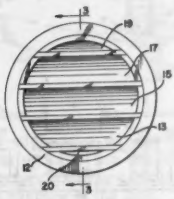
METHOD OF FABRICATING A BAFFLE ASSEMBLY

Neil A. Carter, Danville, Calif., assignor to Cenco Instruments Corporation, Chicago, Ill.

Original application Feb. 19, 1968, Ser. No. 706,322, now Patent No. 3,460,580. Divided and this application June 12, 1969, Ser. No. 862,545

Int. Cl. B21d *53/00*; B21k *29/00*

U.S. Cl. 29—157R 2 Claims



A baffle assembly having good diffusion characteristics formed by baffle plates inserted into angularly disposed slots extending inwardly from opposite ends of a supporting ring. The baffle plates may be sealingly locked into position by encapsulation, for example, by casting a second ring around the supporting ring. Each baffle plate has the inner edge in opposition to a side face of an opposed plate to assure maximum diffusion while not materially increasing resistance to flow. A baffle assembly cooling arrangement is also shown.

3,574,915

FASTENER-PLACING APPARATUS

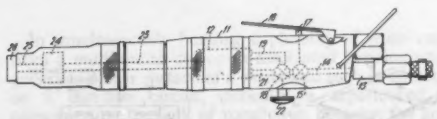
Harvey Philip Jeal, Stevenage, England, assignor to Aerpat A. G., Zug, Switzerland

Filed Nov. 14, 1968, Ser. No. 775,772

Claims priority, application Great Britain, Aug. 8, 1968, 38,000/68

Int. Cl. B23p *19/00, 19/04, 17/00*

U.S. Cl. 29—200 3 Claims



The invention provides an adapter for facilitating placing fasteners of the type comprising a threaded first part which is pulled into a second part to place the fastener. The adapter converts a standard rotary tool to provide separately both rotary and axial movement of a threaded mandrel engageable with the threaded first part of a fastener to be placed. The adapter comprises a body; a reciprocable and rotatable mandrel, one end of which is threaded to engage a fastener and the other end of which forms one part of a lead-screw device, the other part of the lead-screw device being driven to rotate by the rotary tool; and an abutment nose rotatable and reciprocable on the body and keyed for sliding on the mandrel. The abutment nose and the body form two parts of a dog clutch. The mandrel is normally rotated by the lead-screw device, but when a fastener is drawn up onto the mandrel and displaces the abutment nose, the dog clutch engages to prevent rotation of the mandrel, which is then retracted axially into the body, by the action of the lead-screw device, to place the fastener.

3,574,916

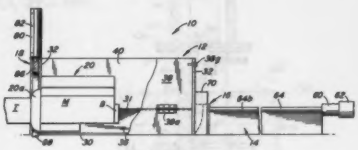
CRANKSHAFT SALVAGE MACHINE

Frank M. Anich, 3070 Chenoweth Road, Tallmadge, Ohio, and Eugene G. Blondheim, 34 N. Village View Road, Akron, Ohio 44278

Filed Feb. 19, 1969, Ser. No. 800,561

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 7 Claims



A crankshaft salvage machine is provided which essentially removes the crankshaft from a conventional internal combustion engine used for automobiles, trucks, or the like. The apparatus clamps the engine block in position, and then rams a cutter head under the block to drive the crankshaft away from the block, while shearing off the oil pan. The unique concave structure of the cutter head seats the end of the crankshaft upon the driving action of the head whereby the greater strength and hardness of the crankshaft allows it to break out of its mounting in the block. Separate ram means along with a pivotal side to the carrying frame allow for disposition of the block after the crankshaft has been removed therefrom. Unique guards are provided to eliminate the possibility of metal jamming any of the rams. The surface configuration and shearing action possible with the head of the driving ram greatly facilitates the operation of the apparatus.

3,574,917

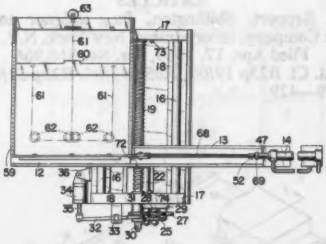
MACHINE FOR ASSEMBLING THE CORE OF HEAT EXCHANGER

Katsuji Miyazaki, Tokyo, Japan, assignor to The Toyo Radiator Company, Limited, Tokyo, Japan

Filed July 31, 1968, Ser. No. 749,206

Int. Cl. B23p *15/26*

U.S. Cl. 29—202 6 Claims

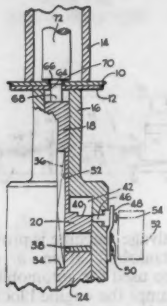


A machine for automatically inserting a plurality of metal tubes one by one into series of openings formed through a plurality of metal plates which are arranged in parallel to each other. The insertion of the metal tubes is effected by a pneumatically operated pushrod. After insertion of one metal tube into a series of openings formed through the metal plates in alignment, the machine is automatically operable to shift the pushrod into register with a second series of openings next to the series of the openings which have been pierced through by the above-mentioned metal tube. The retracting movement of the pushrod causes the supply of a new metal tube to the machine. Then the pushrod thrusts a second metal tube into the next series of the openings of the metal plates. Thus a plurality of metal plates are interwoven by a plurality of metal tubes to form the core of a heat exchanger of plate fin type.

3,574,918
RIVET DETECTING APPARATUS

Harry P. Focht, Kenmore, N.Y., assignor to General-Electro Mechanical Corp., Buffalo, N.Y.

Filed Aug. 6, 1969, Ser. No. 847,930
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.54 5 Claims

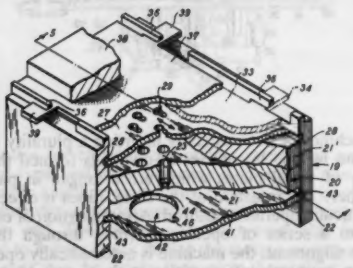


A rivet detecting apparatus having upper and lower annular clamps engaging the workpieces to be riveted and upper and lower anvils positioned in the upper and lower clamps. The upper anvil abuts the headed end of a rivet and is held stationary while the lower anvil is moved against the shank end of the rivet to form a head thereon. The lower anvil is spaced upwardly from a drive ram and is urged upwardly against the work by a spring. When a rivet is inserted in a hole formed in the workpieces, the lower shank end of the rivet engages the lower anvil and moves it downwardly against the spring bias. Downward movement of the lower anvil engages a movable plunger which actuates a limit switch to move the drive ram against the lower anvil and force it upwardly against the shank end of the rivet to form a head thereon. In the absence of a rivet in the rivet hole, the lower anvil remains in its uppermost position, the limit switch is not actuated, and operation of the riveting machine is terminated.

3,574,919
METHODS OF AND APPARATUS FOR ASSEMBLING ARTICLES

Miles N. Reppert, Shillington, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 17, 1969, Ser. No. 816,966
Int. Cl. B23p *19/00;* H05k *13/00;* B23p *21/00*
U.S. Cl. 29—429 10 Claims

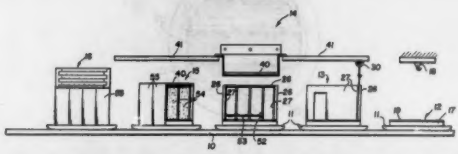


Groups of elongated paramagnetic articles, having headed ends, are aligned with and moved through groups of bores in an assembly fixture after which washers are placed over the ends of the elongated articles. The assembly fixture is inverted and the washers slide along the articles into engagement with the headed ends of the articles and are held thereagainst when the fixture is returned to an original position. The lower unheaded ends of the articles are positioned in holes formed in a wafer after which the elongated articles are released to drop slideably in the holes in the wafers until the washers engage the top surface of the wafer.

3,574,920
DWELLING ASSEMBLY LINE AND METHOD

William G. Stirling; David Stirling, Jr., Avon, and Harper Sibley, Jr., Rochester, N.Y., assignors to Stirling Homex Corporation, Avon, N.Y.

Filed Sept. 16, 1968, Ser. No. 760,103
Int. Cl. B23p *19/00*
U.S. Cl. 29—430 20 Claims

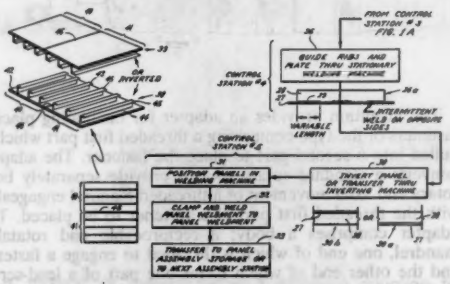


A dwelling is assembled by: building a floor joist framework upside down; installing service fixtures in the floor joist framework and fastening a subfloor to it; framing and covering walls with interior covering; erecting the interior-covered walls on the floor; building a ceiling on a jig above the dwelling; inverting the ceiling jig and lowering the ceiling onto the walls; securing service fixtures to the exposed stud and joist frameworks; trimming, covering, and roofing the dwelling; installing lifting hardware, and transporting the dwelling to its site.

3,574,921
METHOD OF MANUFACTURING STRUCTURAL PANELS

Harry J. Fiegel, Jr., Galveston, and Russell S. Thatcher, Dallas Tex., assignors to Kelso Marine, Inc.

Filed July 24, 1968, Ser. No. 747,287
Int. Cl. B23p *19/04*
U.S. Cl. 29—457 9 Claims

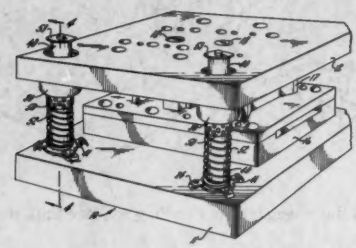

FROM CONTROL STATION #3 FIG. 1A
QUICK RIBS AND PLATE THRU STATIONARY WELDING MACHINE
CONTROL STATION #4
VARIABLE LENGTH
INTERMITTENT WELD ON OPPOSITE SIDES
CONTROL STATION #5
POSITION PANELS IN WELDING MACHINE
INVERT PANEL ON TRANSFER THRU INVERTING MACHINE
CLAMP AND WELD PANEL ASSEMBLY TO PANEL WELDMENT
TRANSFER TO PANEL ASSEMBLY STORAGE OR TO NEXT ASSEMBLY STATION

A method of manufacturing structural panels. A plurality of rib members is placed in a side-by-side relationship on a plate member and the rib members are simultaneously welded to the plate member to form a structural panel. Two or more such structural panels are welded together to form a structural panel assembly.

3,574,922
METHOD OF UTILIZING DIE SET

Joseph C. Eppich, Parma, Ohio, assignor to Danly Machine Corporation, Chicago, Ill.

Filed Apr. 30, 1969, Ser. No. 820,475
Int. Cl. B23q 3/00
U.S. Cl. 29—465 1 Claim

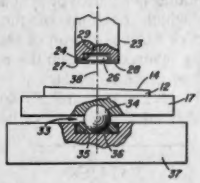


The method of utilizing a die set in which pins having respective ball bearing cages are employed during the fitting of the dies with conventional posts being substituted therefor during production running of the dies.

3,574,923
COMPENSATING BASE FOR SIMULTANEOUSLY BONDING MULTIPLE LEADS

Robert Holbrook Cushman, Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Original application June 15, 1967, Ser. No. 646,249, now Patent No. 3,448,911, dated June 10, 1969. Divided and this application Sept. 10, 1968, Ser. No. 803,494
Int. Cl. B23k 31/02
U.S. Cl. 29—471.1 2 Claims

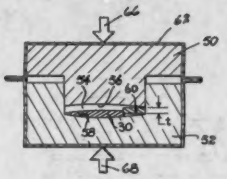


In simultaneously bonding a plurality of leads extending from a multileaded device to associated bonding sites on a generally planar surface of a workpiece such as contact areas on a thin-film circuit, difficulty is experienced (1) in compensating for lack of parallelism between the generally planar surface of the workpiece and a planar bonding surface of a bonding tool so as to apply substantially the same bonding pressure to each lead, and (2) in compensating for such lack of parallelism without permitting any substantial lateral displacement of the workpiece relative to the bonding tool which would either disturb the alignment of the leads relative to their associated bonding sites or damage the device and/or workpiece. A compensating base is disclosed having a platform for supporting a workpiece, and having a pivot mounted for lateral displacement for pivotally supporting the platform. A bonding tool is also disclosed having a recessed portion for receiving the multileaded device with each lead extending across a planar bonding surface of the bonding tool. As the bonding tool is displaced to bring the multileaded device into engagement with the workpiece, the workpiece is pivoted about the first point of contact to bring the workpiece into parallelism with the bonding tool so as to apply substantially the same bonding pressure to each lead to simultaneously bond the leads to their associated bonding sites. As the pivot which pivotally supports the platform is permitted lateral displacement, the workpiece pivots about the first point of contact with the bonding tool without any substantial lateral displacement of the workpiece relative to the bonding tool.

3,574,924
SOLID STATE REPAIR METHOD AND MEANS

Gordon L. Dibble, Fontana, Calif., assignor to North American Rockwell Corporation

Filed Oct. 28, 1968, Ser. No. 771,220
Int. Cl. B22d 19/10; B23p 7/00
U.S. Cl. 29—401 9 Claims

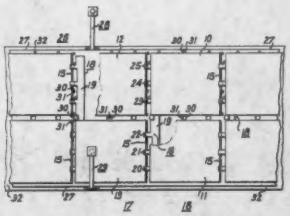


A method of rebuilding a jet engine compressor, fan, or turbine blade containing a worn or damaged area by trimming off the portion of such blade surrounding the area and replacing such portion with another of precisely corresponding size and metallurgical composition. Standardized templates define the size of the trimmed off portion. The replaced portion is integrally joined to the blade by solid state molecular diffusion bonding in a mold exactly duplicating the contour of the original blade when new.

3,574,925
SOLDERING PROCESS

Jens R. W. Schneider; Jorg S. Gehrke, and Werner Lubbe, Wedel,Holstein, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt Am Main, Germany

Filed Dec. 9, 1968, Ser. No. 782,092
Claims priority, application Germany, Dec. 7, 1967, P 16 27 545.9
Int. Cl. B23k 31/02
U.S. Cl. 29—487 1 Claim

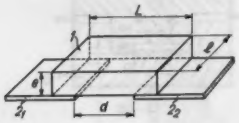


Soldering process for connecting contacts on a plurality of solar cells to form groups of parallel-connected solar cells, which groups are connected in series with each other, including the steps: Applying a solder to upper side contacts of the solar cells of a first group and to surfaces of contact-making elements to be connected with the underside contacts of the solar cells of a second group; applying a fluxing agent solution to the soldering areas of the contact-making elements; placing the solar cells and contact-making elements onto a soldering device with the contact-making elements covering the undersides of the solar cells of the first group and the upper side contacts of the solar cells of the second group; inserting such soldering device together with the items placed thereon into a soldering bath; and removing fluxing agent residues from the solar cells. An improved contact-making element and soldering device for practicing such process.

3,574,926
PROCESS FOR SERIES PRODUCTION OF AN ELECTRIC RESISTANCE FOR A HYBRID MINIATURISED CIRCUIT AND THE RESISTANCE THUS OBTAINED

Paulette Le Men, 158 Blvd. Jean Mermoz, Chevilly-Larue; Maurice J. Menoret, 12 Avenue de Derdun, Chatillon-sous-Bagneux, and Pierre Y. Conruyt, Allee Claude Debussy, L'Hay-les-Roses, France

Filed Nov. 18, 1968, Ser. No. 776,513
Claims priority, application France, Nov. 29, 1967, 130,245
Int. Cl. B01j *17/00*; H01l *7/66*
U.S. Cl. 29—583 3 Claims

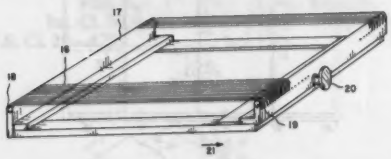


A process for the manufacturing of an electric resistance for a hybrid miniaturized circuit from a wafer of p-type silicon or germanium, consisting in preparing said wafer with dimensions exceeding those corresponding to the required resistance value; diamond cutting said wafer into smaller ones, preparing for each smaller wafer two connections in the form of gilded metal strips, welding each smaller wafer to its two connections at a temperature above the gold-semiconductor eutectic formation point, and adjusting said smaller wafers to said required resistance value by removing material therefrom by means of an abrasive powder stream.

3,574,927
CONSTRUCTION OF LOW-TENSION WIRE ARRAYS

Albert L. Whetstone, Southport, Conn., assignor to Science Accessories Corporation, Southport, Conn.

Filed Jan. 29, 1969, Ser. No. 794,950
Int. Cl. H01s *4/00*
U.S. Cl. 29—592 4 Claims



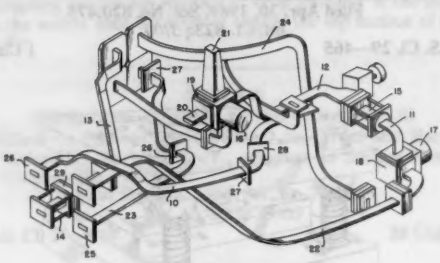
A method of constructing a low-tension wire array including the steps of arraying wires on an expandable frame expanding the wires past their elastic limit, and releasing the frame tension until each wire hangs in catenary. The wires are then placed onto an epoxied sheet and the ends cut.

3,574,928
METHOD FOR FITTING AND INSTALLING MICROWAVEGUIDES

Ernest T. Long, China Lake, Calif.

Filed Oct. 17, 1968, Ser. No. 768,271
Int. Cl. H01p *11/00*
U.S. Cl. 29—600 1 Claim

A method for modeling microwaveguides which comprises providing a plastic strip or Acrylic or Plexiglas, heating the strip until it is flexible, bending the heated strip to the desired

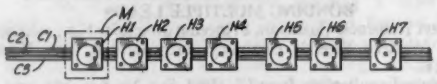


shape of the waveguide and cooling in place until the plastic hardens.

3,574,929
ADUSTABLE RESISTORS AND METHOD

Robert D. Michik, Riverside, Calif., assignor to Bourns, Inc.

Filed June 2, 1969, Ser. No. 829,337
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 7 Claims

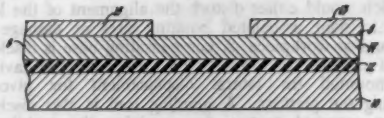


A method of making adjustable resistors including three-terminal resistors (potentiometers) in which a set of long flat conductors is fed from a source in parallel array through a molding machine which in a step-by-step operation forms on and around the conductors a series of spaced-apart insulative resistor bodies in which portions of the conductors are exposed for contact or for welding on of resistance elements, the conductors being severed between the resistor bodies and formed into or left in place as electrical terminals. In some forms, resistor body covers are similarly formed on a metal strip, and individually mated with resistor bodies.

3,574,930
METHOD OF FORMING A PRINTED THERMISTOR ON A METAL SHEET

John W. Riddel, Fenton, and Raymond E. Schwyn, Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

Original application Dec. 8, 1966, Ser. No. 600,230, now Patent No. 3,469,224, dated Sept. 23, 1969. Divided and this application Oct. 4, 1968, Ser. No. 798,498
Int. Cl. H01c *7/04*
U.S. Cl. 29—612 6 Claims



This disclosure relates to thermistor assemblies, and more particularly to a nickel substrate having a thermistor film thereon and a method of making the same. The thermistor assembly is formed by coating a nickel substrate with a film of thermistor material and subsequently heating the coated nickel substrate until a thin, adherent insulative layer of nickel oxide is formed. The nickel oxide layer insulates the nickel substrate electrically from the thermistor material and

it bonds the thermistor material to the nickel substrate. After the coated nickel substrate has cooled, two electrical contacts in spaced relationship to each other are printed on top of the thermistor film. This thermistor assembly as a fast temperature response, high heat dissipation characteristics which permit the thermistor to be operated at power levels above and below one watt, and provides a sturdy construction which is not readily broken.

3,574,931
METHOD FOR MANUFACTURING RESISTANCE-TEMPERATURE DEVICE

Mitsuaki Mochizuki, Suma-Ku; Minoru Tanaka, Okashi, and Tadataka Koyama, Takarazuka, Japan, assignors to Okazaki Manufacturing Company, Kobe, Japan

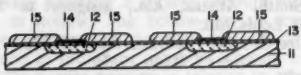
Filed Dec. 26, 1967, Ser. No. 697,554
Int. Cl. H01c *1/02, 17/00*
U.S. Cl. 29—613 **4 Claims**

The method of making a resistance-temperature measuring device comprising a dielectric support upon which a winding of resistance wire is carried. The ends of the winding are connected to terminal leads. Sufficient excess turns are allowed so that the resistance value may be calibrated by cutting off one end of the winding. The end of the winding remote from the leads is temporarily anchored pending calibration, temperature characteristic and rapid and accurate response.

3,574,932
THIN-FILM BEAM-LEAD RESISTORS

Richard W. Wilson, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 12, 1968, Ser. No. 751,813
Int. Cl. H01c *7/00, 17/00*
U.S. Cl. 29—620 **7 Claims**



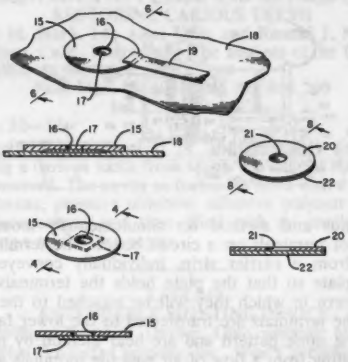
Thin-film beam-lead resistors are fabricated for use in hybrid microcircuits by a sequence of steps beginning with the formation of a substrate member having an array of dielectric islands coplanar with and supported by a matrix material that is selectively etchable in the presence of the dielectric islands. A refractory dielectric layer is then deposited on the substrate to cover the islands and the surrounding coplanar matrix material. A thin-film resistance element is then deposited on each portion of the dielectric layer that covers a dielectric island. Conductive terminal pairs are then deposited in contact with spaced-apart locations on each resistance element, followed by the step of removing the matrix material, together with contiguous portions of the dielectric layer to separate the completed resistor assemblies.

3,574,933
METHOD OF MAKING PRINTED CIRCUIT BOARDS WITH PLATED-THROUGH HOLES

Art E. Cassingham, Los Altos, and Arvin C. Skyrud, Milpitas, Calif., assignors to Sylvania Electric Products Inc.

Filed Nov. 29, 1968, Ser. No. 779,845
Int. Cl. B41m *3/08;* **H05k** *3/00;* **G03c** *5/00*
U.S. Cl. 29—625 **6 Claims**

Artwork for printed circuit boards with plated-through holes is made with terminal area pads having center openings covered with an optical filter, preferably a colored strip. By appropriately filtering light passing through the artwork, two master transparencies are made photographically, one with and the other without center hole images corresponding to the center openings in the pads. The transparency with such images is used to expose a photosensitized copper-clad board

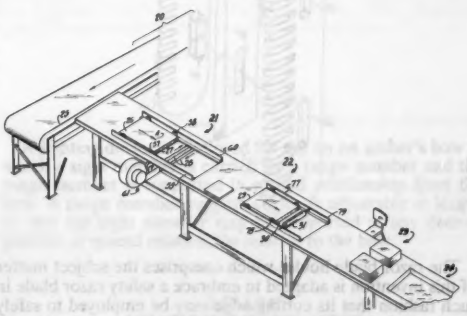


for locating centers of the holes preparatory to drilling of the board. The transparency without center hole images is used to transfer the same circuit pattern to the drilled board after the holes have been metallized and the board is again photosensitized. The board is plated with etch-resistant metal, stripped and finally is etched to complete the circuit pattern on one or both sides of the board.

3,574,934
METHOD OF SECURING COMPONENTS TO A CIRCUIT BOARD

Ralph A. De Rose, Villa Park, Ill., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed June 3, 1968, Ser. No. 734,065
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **1 Claim**

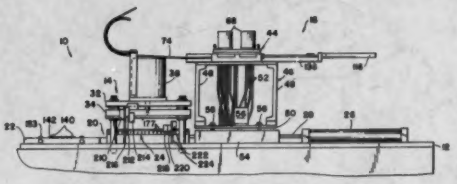


A template made of steel or other hard material is identical with a printed circuit card with respect to the locations of holes for receiving component leads to be soldered to the printed circuit cards. The template and card are sandwiched together at the start of production. Then, all components are mounted with their leads projecting through the bottom of the template. Thereafter, they are cut off flush with the bottom of the template. Next, the template is removed to expose the stub ends of the leads. Then a roller is run across the bottom of the card, and the leads are bent over into a presoldering position.

3,574,935
APPARATUS AND METHOD FOR APPLYING TERMINALS TO A CIRCUIT BOARD

Quentin Berg, c/o Berg Electronics, Inc., York Expressway, New Cumberland, Pa.

Filed Nov. 12, 1968, Ser. No. 775,055
Int. Cl. H05k 3/30, 13/04
U.S. Cl. 29—626 23 Claims

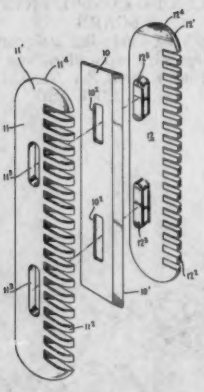


Apparatus and method for simultaneously mounting a plurality of terminals on a circuit board. The terminals are severed from a carrier strip, individually conveyed to a transfer plate so that the plate holds the terminals in the same pattern in which they will be attached to the circuit board. The terminals are transferred to the lower face of a ram in the same pattern and are held thereon by parasitic drag resulting from a flow of air past the terminals and into the ram. The ram with the terminals positioned on its lower face is lowered to seat the terminals on the circuit board in the desired pattern and to secure the terminals thereto.

3,574,936
RAZOR FOR REMOVING OBJECTIONABLE HAIRS FROM THE NOSE OF THE USER

Harold V. Bullerman, 1106 Main, Windsor, Ill. 61957

Filed Oct. 10, 1968, Ser. No. 766,404
Int. Cl. B26b 21/00
U.S. Cl. 30—29.5 3 Claims



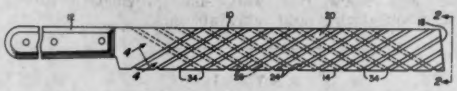
The razor blade holder which comprises the subject matter of this invention is adapted to embrace a safety razor blade in such fashion that its cutting edge may be employed to safely remove hair from the nose and ears of the user and to permit ready substitution of a new for a used blade when blade replacement is necessary.

3,574,937
KNIFE FOR CUTTING RUBBER AND THE LIKE

Merritt Wolfe, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 1, 1968, Ser. No. 764,146
Int. Cl. B26b 9/02
U.S. Cl. 30—123.3 10 Claims

A knife for cutting rubber and the like having two generally smooth sides provided with grooves, and a generally straight sharp cutting edge provided with notches. In the use of the knife, lubricant which was previously supplied to the grooves is dispensed to the confronting surfaces of the knife and the rubber, and the notches engage and break, or remove, any filamentary material embedded in the rubber.

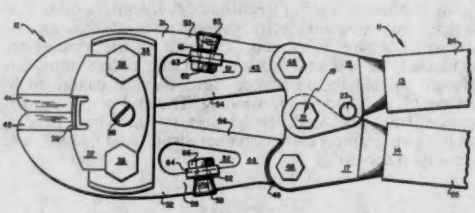


The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

3,574,938
JAW MOUNTED ADJUSTING MEANS FOR CUTTING TOOL

Thomas M. Porter, 8 Devens St., Concord, Mass.

Filed Nov. 22, 1968, Ser. No. 778,054
Int. Cl. B26b 17/04
U.S. Cl. 30—193 5 Claims

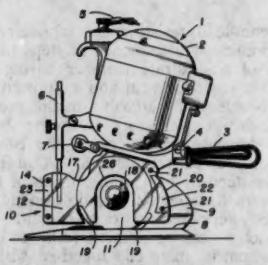


A toggle handle-actuated compression tool provided with means mounted on the jaw portion for adjusting the setting of the closed position of the working portions of the jaw.

3,574,939
SAFETY GUARD FOR CARPET CUTTER

Charles N. Smith, Athens, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 14, 1968, Ser. No. 767,226
Int. Cl. B26b 29/00
U.S. Cl. 30—286 3 Claims



A safety guard for a portable carpet cutter having shields covering a substantial portions of both sides of the cutting blade.

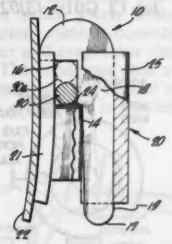
3,574,940
LOCKPIN FOR ORTHODONTIC BRACKET

Richard W. Allesee, La Porte, Ind., assignor to Unitek Corporation, Monrovia, Calif.

Filed Nov. 21, 1968, Ser. No. 777,847
Int. Cl. A61c 7/00
U.S. Cl. 32—14 5 Claims

A lockpin for confining an arch wire in a light-wire orthodontic bracket. The pin has a shank which is received in

a vertically extending channel in the bracket. A head extends lingually from the shank over an arch-wire channel in the bracket. The shank has a shoulder which rests on a bracket surface defining the bottom or floor of the arch-wire channel, and the shoulder serves to space the head a predetermined



distance above the floor of the arch-wire channel. A portion of the pin between the shoulder and head is configured to extend lingually into the arch-wire channel to adapt the bracket for use with an arch wire having a diameter smaller than the width of the arch-wire channel.

3,574,941
DEVICE FOR STRAIGHTENING TEETH AND METHOD OF MAKING SAME

Theo Ritter, 9 Avenue Ruchonnet 1000, Lausanne, Vaud, Switzerland

Filed Aug. 19, 1969, Ser. No. 851,364
Claims priority, application Switzerland, Oct. 6, 1965, 13,852
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 **8 Claims**

An orthodontic device for straightening teeth includes a plate which partially surrounds the patient's teeth and has embedded therein an internally threaded nut or housing adjacent the tooth to be straightened. The housing provides an anchoring point for a capless pressure screw which may be solid or hollow. The hollow-type of screw contains a spring normally urging a piston against the tooth to be straightened to provide a constant pressure on the tooth to move it into proper position in relation to other teeth in the patient's mouth. The degree of pressure applied to the tooth may be adjusted from time to time by appropriate rotation of the screw. An orthodontic device of the aforementioned nature may be made by a flasking method which includes baking, or by a spray on cold cure method. Both methods utilize a plaster model of the patient's teeth to which a wax or resin is applied to form the plate.

3,574,942
ORTHODONTIC APPLIANCE

James B. McCabe, 1900 Deo Dara Drive, Birmingham, Ala.

Filed Dec. 18, 1969, Ser. No. 886,321
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 **10 Claims**

Orthodontic bracket mounted on tooth band and projecting outwardly therefrom. Vertical cylinder at outer side of bracket spaced from tooth band with arch wire receiving recess therebetween. Pin mounted for rotation in cylinder carries lateral projection at one end movable across recess to retain arch wire. Actuating member at other end of pin movable to position lateral projection selectively across and removed from said recess.

3,574,943
DENTAL CAVITY LINER AND METHOD OF RESTORING CARIOUS TEETH

Marvin M. Stark, Los Altos Hills, and Ronald J. Nicholson, San Jose, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 10, 1969, Ser. No. 805,790
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 **3 Claims**

Concerned is a method of and substance for use in restoring a carious tooth from which the carious material has been removed. The cavity so formed is lined with a layer of a polysiloxane, pressure sensitive, adhesive polymer dissolved in a fluorocarbon and then filled with an amalgam, thus providing a nonleaking repair.

3,574,944
EXTENDABLE SIGHTING DEVICE

David William Reynolds, Dayton, Ohio, assignor to Reynolds Precision Products Company, Inc., West Carrollton, Ohio

Filed Sept. 10, 1968, Ser. No. 758,785
Int. Cl. F41g *1/00*; **F41b** *5/00*
U.S. Cl. 33—46 **2 Claims**

A sighting device is disclosed for use on an archer's bow in which a sight member is carried by a range member and the range member is supported in spaced relationship from the bow. A range member support device is adjustable in length so that the sight member may be supported at any desired position in spaced relationship relative to the bow.

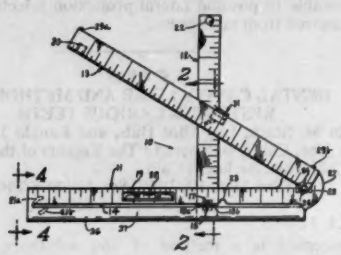
3,574,945
MEASURING INSTRUMENT

John R. Main, 2101 Fountain View Drive,No.1, and Newell R. Wall, 2200 Willowick, Houston, Tex. 77027

Continuation-in-part of application Ser. No. 648577, June 26, 1967, now abandoned. This application July 23, 1969, Ser. No. 844,016
Int. Cl. G01c *1/00*
U.S. Cl. 33—70 **8 Claims**

The invention comprises a measuring instrument including a graduated base blade, longitudinally slotted so that the lower end of a graduated, upright blade may be guidably, slidably connected to the base blade. An adjustably, angularly positionable, graduated, hypotenuse blade is pivotally connected to one end of the base blade. For exam-

ple, with hypotenuse blade aligned with roof line and upright spaced from pivot on base blade, roof area may be



calculated. The blades are adapted to be folded together in releasably latched position for pocket carriage.

3,574,946

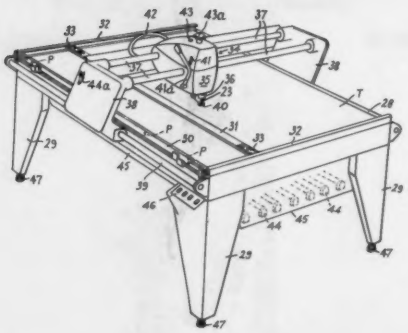
GRAPHIC REPRODUCTION PROCESSES

Donald Mayston, Potters Bar, and John H. Elworthy, Abbotts Langley, England, assignors to Protocol Engineering Limited, Hartfordshire, England

Continuation of application Ser. No. 731,682, May 17, 1968, now abandoned , which is a continuation of application Ser. No. 509,857, Nov. 26, 1965, now abandoned. This application Jan. 5, 1970, Ser. No. 506

Int. Cl. B41b *1/00*

U.S. Cl. 33—184.5 **10 Claims**



The present invention relates to graphic or like reproduction processes and is concerned with obtaining accurate registration between the number of sets of color components, particularly color separation components, with respect to a carrier sheet. In accordance with the invention and where there is a number of sets of color separation components, the components of each set are initially registered with respect to the carrier sheet and then two spaced registration holes are formed through each set of components and the carrier sheet in the same relative positions, whereupon the plurality of sets of components and the carrier sheet can be positioned in register by locating the now formed register holes over suitable register pins. The invention also relates to apparatus for carrying out this method and comprising a surface to receive the color components and the carrier sheet with means for holding the relative materials in proper relation to said surface: a drilling machine is also provided for making the register holes in the materials simultaneously, said machine being mounted so as to be capable of movement in 2° above the surface.

3,574,947

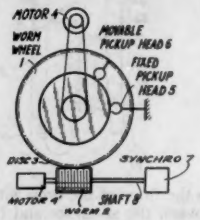
APPARATUS FOR MEASURING NON-UNIFORMITIES OF A TRANSMISSION

Karel Stepanek, Prague, and Josef Klapste, Cesky Brod, Czechoslovakia, assignors to Vyzhumny ustav obrabecich stroju a orbrabeni, Prague, Czechoslovakia

Filed Sept. 17, 1968, Ser. No. 760,168

Int. Cl. G01m *13/02*

U.S. Cl. 33—179.5 **12 Claims**



An electrical signal having a frequency corresponding to the rotary speed of one rotatable member of a transmission having a large transmission ratio is compared in phase with an electrical signal having a frequency corresponding to the rotary speed of the other rotatable member of the transmission in coupling engagement with the one. The determined variations in phase relation of the signals are indicative of nonuniformities of the transmission.

3,574,948

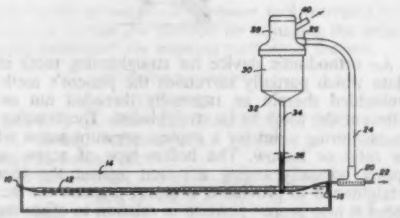
APPARATUS AND METHOD FOR DRYING TUBING

Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes, N.J.

Filed Sept. 9, 1969, Ser. No. 856,313

Int. Cl. F26b *3/00*

U.S. Cl. 34—9 **12 Claims**



A drying apparatus for use in the continuous process of forming tubing or treating wire in which one of the steps in the operation is either cooling or washing by means of a fluid. A suction system has a through passageway in a drying or cooling head which contemplates the feeding of the formed tubing or treated wire through a T-shaped head connected to a source of vacuum. The fluid is drawn from the surface of the passing tubing or wire by the inrush of air into the head, which suction line transports the removed fluid to a vacuum chamber receiving device. The collected fluid from the vacuum chamber may be returned to the cooling or treating tank or may be discharged to a waste disposal.

3,574,949

LUMBER DRYING

Philo T. Farnsworth, Salt Lake City, Utah, assignor to Frederick R. Furth, Cornwall Bridge, Conn., a fractional part interest to each

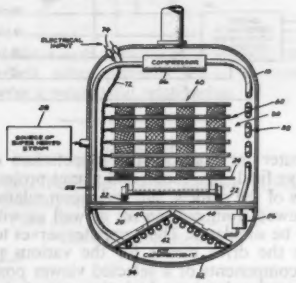
Filed Apr. 1, 1969, Ser. No. 811,835

Int. Cl. F26b *5/04*

U.S. Cl. 34—16.5 **14 Claims**

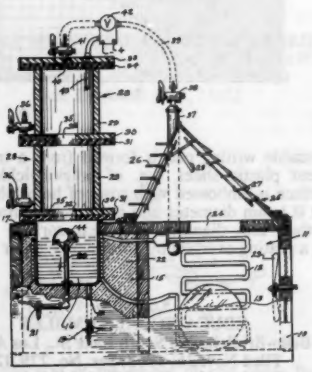
In this invention means are provided for maintaining an accelerated liquid diffusion rate through the cell walls of green lumber, for the formation of small ice crystals at the

surfaces, for the direct transformation of the ice crystals into water vapor (sublimation) as rapidly as they are formed, and for the removal of the water vapor, without damage to the wood. The rate of drying is thus extremely high, being in the order of some 30 to 40 times faster than by forced-air drying and without the losses from cracking, checking and warping associated with the forced-air system. The apparatus includes a sealed chamber in which green lumber to be dried is placed. A refrigeration system consisting of the usual compressor, condenser and evaporator elements is contained within the chamber. The condenser coils are mounted on the sidewalls to radiate heat into the central and upper portions of the chamber. The evaporator is located in the bottom of



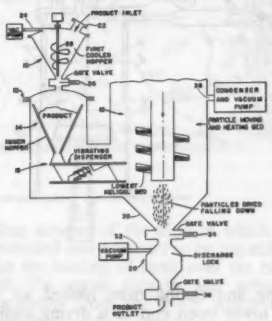
the chamber to reduce the temperature thereof to a value well below that at which water freezes, and to create a region of very low vapor pressure. A vacuum pump is connected to the chamber for reducing the pressure and temperature therein to a value at which moisture in the lumber is diffused through the cell walls and ice crystals form on the surfaces. Heat from the condenser and the heater "sticks" disposed between layers of lumber sublime the ice crystals as fast as they are formed, the water vapor therefrom gravitating to the lower region of the chamber where it is condensed and formed into ice. This process is performed in such a way that the lumber never freezes and the subliming action is continuous during the drying cycle.

3,574,950
LYOPHILIZING APPARATUS
Jospeh L. Dantoni, Rte 6, Westminster, Md. 21157
Filed June 12, 1969, Ser. No. 832,701
Int. Cl. F26b *13/30*
U.S. Cl. 34—92 **12 Claims**



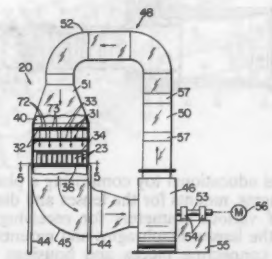
A lyophilizing apparatus having a refrigeration system including an evaporator section and a condenser section, the evaporator section refrigerating a well-shaped cold trap over which one or more chambers for containing the material to be freeze-dried can be stacked, a source of vacuum in the cold trap subjecting all of the stacked chambers to a low pressure to cause sublimation of the moisture in the material in the chambers and condensation thereof in the cold trap and a means to direct heat given off by the refrigeration condenser against the exterior surface of the chambers and into the same to enhance the sublimation process.

3,574,951
APPARATUS FOR CONTINUOUSLY FREEZE-DRYING GRANULATES
Georg-Wilhelm Oetjen, Koln-Marienburg, and Hanns Ellenberg, Rosrath, Germany, assignors to Leybold-Heraeus-Verwaltungs-GmbH, Cologne-Bayental, Germany
Filed Apr. 25, 1969, Ser. No. 819,305
Claims priority, application Germany, Apr. 25, 1969, P1778376.5
Int. Cl. F26b *13/30*
U.S. Cl. 34—92 **8 Claims**



A freeze-drying apparatus includes a vacuum chamber, and a drying bed arranged within the vacuum chamber, which drying bed has the shape of a helix disposed about a vertical axis. Means are provided for supplying the frozen particles at one end of the drying bed, for moving the frozen particles along the drying bed, for retaining the particles on the bed while they are being moved, and for removing the particles from the other end of the drying bed. Means are also supplied which heat the frozen particles while they are being moved along the bed so as to aid sublimation.

3,574,952
DRYING APPARATUS
Harry W. Lee, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Apr. 22, 1969, Ser. No. 818,215
Int. Cl. F26b *25/00*
U.S. Cl. 34—105 **17 Claims**



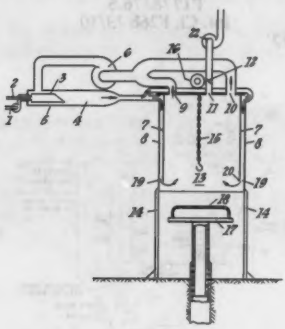
An apparatus for and method of drying articles such as tubular containers each having a bottom wall, an adjoining

sidewall, and an open end wherein said containers are supported in an inverted position and a drying gas moved therepast in such a manner that it circulates around and within the containers and provides efficient drying of both the interiors and exteriors thereof.

3,574,953
DRYING AND CURING OVENS

Dennis George Furnell, Blackheath, London, England, assignor to Ayrodev Processes Limited, Poplar, England

Filed Feb. 20, 1969, Ser. No. 800,903
Claims priority, application Great Britain, Sept. 24, 1968, 45284
Int. Cl. F26b *19/00*
U.S. Cl. 34—219 **3 Claims**

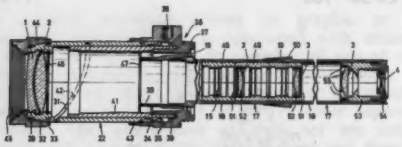


In a drying and curing oven heated air is introduced through the lower open end of a drying compartment and rises and makes intimate contact with an article supported in said compartment, and used air is exhausted through one or more ducts extending from a closed top of the compartment. If desired, the exhausted used air is discharged to a burner for heating incoming drying air and is recirculated with the latter to said drying compartment.

3,574,954
OPTICAL EDUCATIONAL TOY

Peter Schone, Stuttgart; Horst Link, Boblingen, and Manfred Berrer, Stutgart-Feuerbach, Germany, assignors to Franckh'sche Verlagshandlung W. Keller & Co., Stuttgart-O, Pfizerstrasse, Germany

Filed Nov. 14, 1968, Ser. No. 775,792
Claims priority, application Germany, Feb. 9, 1968, P 16 22 137.7
Int. Cl. G09b *23/22*
U.S. Cl. 35—19 **15 Claims**

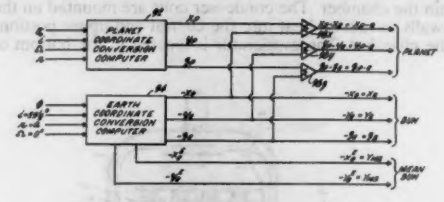


An optical educational toy comprising a plurality of lenses and diaphragms, mounts for the lenses and diaphragms, tube elements of various diameters for receiving and movably supporting the lenses, diaphragms and mounts in axial alignment, and connecting pieces and housings to permit the construction of various optical instruments such as a single lens reflex camera having a shutter mechanism comprising a mirror support and a shutter element connected together by a pawl which automatically releases upon depression of a button to expose film.

3,574,955
PLANETARIUM USING A RECTANGULAR COORDINATE SYSTEM

Leonard Skolnick, Harwood, Md., assignor to Planetaria, Inc., Yorklyn, Del.

Filed May 13, 1966, Ser. No. 549,832
Int. Cl. G09b *27/00*
U.S. Cl. 35—42.5 **18 Claims**

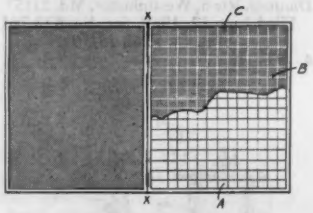


A computer for control of a planetarium consisting of separate star field, sun, moon and planet projectors wherein movements of the planets, sun and moon relative to the star field as viewed from outside of, as well as within cis-lunar space may be simulated. The computer serves to control and coordinate the drive means for the various projectors by using the components of a selected viewer position and the various viewed points, at which the projected bodies occur within the star field, relative to the star field and solar origin, for example. The computer translates input coordinates into rectangular or other coordinate components, like components of the various points of which can be accumulated and derives a summation line of sight vector output signal to direct the projection of each projector toward the proper position within the star field.

3,574,956
WRITING SUPPORT

Robert Hamelin, 17 Boulevard Bentrand, Caen,Calvados, France

Filed Nov. 18, 1968, Ser. No. 777,552
Claims priority, application France, Nov. 17, 1967, 128640
Int. Cl. B43l *1/10*
U.S. Cl. 35—66 **5 Claims**



An erasable writing pad is formed from a transparent or translucent plastic sheet, e.g. of polyvinylchloride, whose front surface is embossed with rows of hemispherical bulges of about 0.1 mm diameter and a mutual separation equal to or less than that diameter, the rear surface of the sheet carrying a grating overlain by a distinctive color layer.

3,574,957
EDUCATIONAL TUMBLER

Jack D. Bello-Bridick, 820 South Lake St., Los Angeles, Calif.

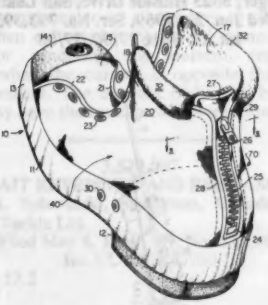
Filed Nov. 26, 1968, Ser. No. 779,020
Int. Cl. G09b *1/24*
U.S. Cl. 35—76 **8 Claims**

An educational or instructive tumbler is disclosed herein having a tubular, tapered sidewall integrally formed with a bottom at one end so as to hold fluid therein. A handle is carried on the external surface of the sidewall and is cantilevered therefrom to terminate in spaced-apart relation-

ship with respect to the sidewall. Midway between the opposite ends of the tumbler, the sidewall is provided with a plurality of rotatable bands forming different levels. Each

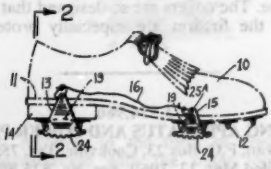
band carries indicia such as pictorial, alphabetic or numerical characters which, when properly placed in vertical alignment, represents a meaningful relationship.

3,574,958
WADING SHOE
Leon L. Martuch, Midland, Mich., assignor to Scientific Angles Inc., Midland, Mich.
Filed Jan. 30, 1970, Ser. No. 7,069
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 **23 Claims**



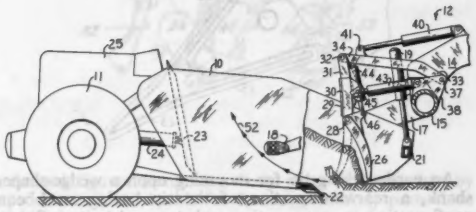
A wading shoe made from nonwetting, nonwater-retaining material including a nonwetting, nonwater-retaining sole is provided with a quick release closure in addition to the normal lace adjustable means of closing a shoe.

3,574,959
GOLF SHOE SPIKE GUARDING SHIELD
Edward L. Cicero, 52-62 66th St., Maspeth, N.Y. 11378
Filed Sept. 17, 1969, Ser. No. 858,631
Int. Cl. A43b *3/10, 13/22*
U.S. Cl. 36—7.6 **6 Claims**



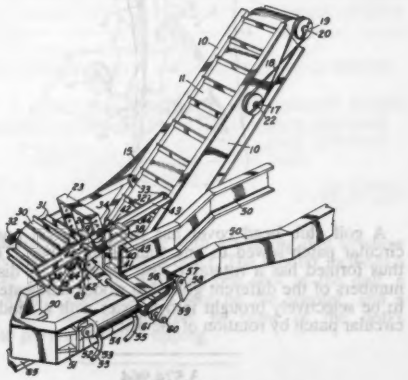
For the protection of the spikes of golf shoes from wear and dullness when the golfer is walking on a hard surface, such as pavement, gravel or the like, there is provided detachable shields which extend laterally between the shoes, may be made in spaced pairs of rubber or the like for use on the heels and soles of the shoes to fit closely between and against the spikes and have gripping engagement with the sole portions of the shoes. The shield may also be a single piece of rubber or other yieldable substance for use in the arch portion of the shoe abutting the heel to prevent the spikes from engaging a solid surface when the golfer is walking on a hard unyielding surface that would dull the spikes.

3,574,960
BACKHOE-TYPE SELF-LOADING SCRAPER
Robert A. Peterson, San Leandro, and Roy J. Barnes, Pleasanton, Calif., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 8, 1968, Ser. No. 785,841
Int. Cl. B60p *1/04*
U.S. Cl. 37—4 **7 Claims**



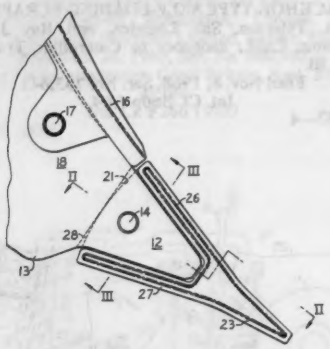
A self-loading scraper of the kind in which the apron is articulately mounted and powered to be capable of a hoeing action to assist the loading of earth over the blade and into the bowl with the apron support and actuating linkage extending rearwardly from the hitch which connects the scraper with the tractor which draws it.

3,574,961
AUTOMATIC LOADING AND UNLOADING DEVICE
William C. Bond, Rte 1, Clinton, S.C. 29329
Filed June 13, 1968, Ser. No. 736,615
Int. Cl. B60p *1/36*
U.S. Cl. 37—8 **6 Claims**



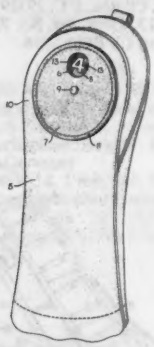
Automatic material loading and unloading apparatus comprising an activating ground wheel, a cutting blade or scoop, a conveyor system, a material holding means and a mechanism for dumping said material from said holding means.

3,574,962
EARTHWORKING TIP MOUNTED FOR LIMITED PIVOTAL MOVEMENT
Roger M. Smith, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 11, 1968, Ser. No. 782,843
Int. Cl. E02f 9/28
U.S. Cl. 37—142R 3 Claims



An earthworking tip for mounting upon a wedge-shaped shank, a rearward portion of the tip having an I-beam configuration in cross section with top and bottom flanges generally mating with the wedge-shaped shank and a vertical web integrally joining the flanges and mating with a vertical slot in the shank.

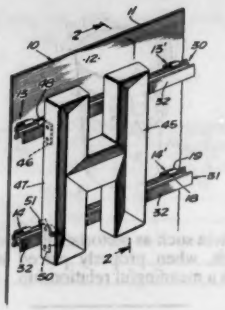
3,574,963
GOLF CLUB COVER
Monroe H. Rosenow, Brookfield, Wis., assignor to ABC Industries, Inc., Milwaukee, Wis.
Filed Jan. 31, 1969, Ser. No. 795,502
Int. Cl. G09f 3/20
U.S. Cl. 40—5 2 Claims



A golf club head cover has the peripheral portion of a circular patch sewed to one wall of the cover. The pocket thus formed has a rotatable disc therein. The disc has the numbers of the different golf club woods delineated thereon to be selectively brought into register with a window in the circular patch by rotation of the disc.

3,574,964
TRACK FOR REMOVABLE SIGN LETTERS
Lloyd C. Ownbey, Vernon, Calif., assignor to Bevelite Mfg. Company, Vernon, Calif.
Filed Nov. 20, 1968, Ser. No. 777,234
Int. Cl. G09f 1/00
U.S. Cl. 40—140 4 Claims

A track system comprising essentially two kinds of parts, namely a row of clips fastened to an appropriate sheet background wherein the legs of the clips stand forwardly away from the background, and one or more substantially H-shaped tracks wherein opposite edges of one leg of the H are



attached to free ends of respective clips, whereby to mount the track clear of the sheet background, and wherein the leg which is held by the clip is at a location clear of fastening means used to attach the clip to the sheet background.

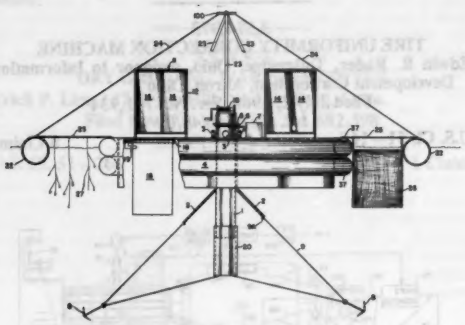
3,574,965
PROTECTIVE COVER MEANS FOR FIREARMS
Richard H. Seiger, 5525 Hillside Drive, Salt Lake, Utah
Filed Jan. 23, 1969, Ser. No. 793,393
Int. Cl. F41c 27/00, 27/08
U.S. Cl. 42—1 7 Claims

New and improved stock covers for firearms, which covers can remain installed even while the firearm piece is being fired. The subject covers protect particularly exposed areas of the stock from marring as by hitting objects, falling of the firearm piece, and so forth. The stock covers of the invention include suitable openings to provide relief or access areas for certain functional portions of the firearm, and, additionally, means such as flaps and straps for ultimately securing the covers in place. The covers are so designed that side areas of the stock of the firearm are especially protected against damage.

3,574,966
FISHING APPARATUS AND POWER PLANT
Evan G. Sullivan, P.O. Box 23, Cookville, Tex. 75558
Filed May 22, 1969, Ser. No. 826,890
Int. Cl. A01k 73/00, 75/00
U.S. Cl. 43—8 15 Claims

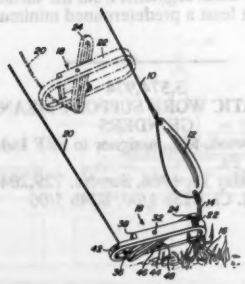
A buoyant main body has a sleeve extending therethrough anchored to the water bottom to provide a stationary hub about which the buoyant body may rotate by the use of vanes which engage the water and the air to take advantage of the currents thereof. A power plant is mounted on the body and is driven by gearing from the hub. Outwardly of the buoyant

body a large buoyant ring is supported in concentric relation by means of guy wires from a centrally extending derrick and is maintained in proper position by radially extending elements upon which nets, fishhooks and the like for



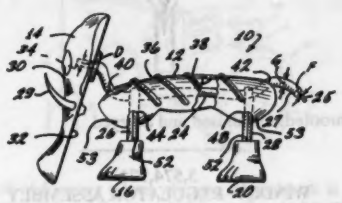
catching fish are mounted so that the rotary movement of the buoyant body and ring cover a large area to attract many fish which are then collected in the usual manner. Means are provided for rendering the current engaging vanes inoperative when the current is opposite the direction of desired movement. The buoyant body may be a boat or a drum and may have the usual power propulsion means.

3,574,967
FISH BAIT RETRIEVER AND REEL ASSEMBLY
Thaddeus M. Splawinski, Saskatoon, Canada, assignor to Snagaway Tackle Ltd.
Filed May 8, 1969, Ser. No. 822,981
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **7 Claims**



A fish bait retriever in the form of concentric loops hingedly interconnected with the outer loop having an entrance slot adjacent the hinge point for receiving a fishline and the inner loop having a flexible line attached thereto for enabling the retriever to be placed on a fishline and moved by gravity to engagement with a fish lure, hook assembly or the like and the line tensioned to retrieve the bait, lure, hook assembly or the like. The flexible line attached to the inner loop is connected to a belt attached reel that includes a manually rotatable spool having a pocket in the exterior face thereof for frictionally and detachably storing the retriever.

3,574,968
FIGURE TOY
Floyd E. Schlau; William R. Baynes, Palos Verdes Peninsula; Roger M. Plant, Westminster, and George E. Robson, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 30, 1969, Ser. No. 795,195
Int. Cl. A63h *33/00*
U.S. Cl. 46—22 **5 Claims**



Animal figures comprising body parts held together by pipe cleaners, and molds for forming the body parts from pliable plastics.

3,574,969
A WALKING DOLL AND WHEELED SCOOTER COMBINATION
Dale P. Cleveland, Torrance, and Thomas R. Wilson, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 10, 1969, Ser. No. 805,508
Int. Cl. A63h *11/02*
U.S. Cl. 46—101 **5 Claims**

A miniature scooter for use with a walking doll to allow the doll to push and ride the scooter. The scooter includes a low flexible platform for receiving one foot of the doll, a hook for loosely capturing the foot on the scooter, and a handlebar that lies immediately in front of the doll's abdomen to prevent forward tipping.

3,574,970
METHOD OF PROPAGATING ROSES BY GRAFTING
Cornelis Geytenbeek, Woodside, South Australia, Australia, assignor to Alain Meilland, Cap d'Antibes, France
Filed June 18, 1968, Ser. No. 737,932
Claims priority, application Australia, June 19, 1967, 23290/67
Int. Cl. A01g *1/06*
U.S. Cl. 47—7 **6 Claims**

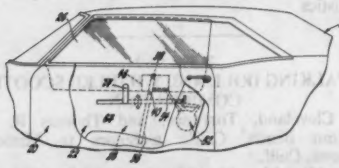
A method of propagating roses by grafting as a veneer onto

cuttings of understock in which the understock cuttings have been unrooted, uncallused and de-eyed.

3,574,971
WINDOW REGULATOR ASSEMBLY

Julius Hezler, Jr., Bellaire, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1969, Ser. No. 876,453
Int. Cl. E05f *11/44*
U.S. Cl. 49—350 3 Claims

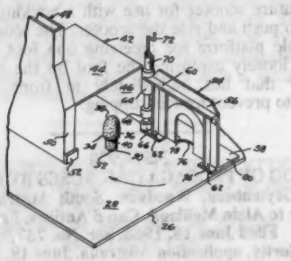


A window regulator assembly for an automobile type window panel includes a reciprocating input type window operator for vertically shifting the window panel and a reciprocating input arrangement. The input arrangement includes a control member reciprocably shiftable in a track, a draft link reciprocably shiftable to drive the window operator and a blocking member therebetween shiftable and rotatable relative to the track. The blocking member is engageable by means on the control member to rigidly couple the latter to the draft link under a positive or window-controlling input to the control member and is rotatable by the draft link into a movement-blocking position upon a negative input to the window operator directly from the window panel.

3,574,972
METHOD AND APPARATUS FOR FORMING FITTING COVERS

Dillard Breeding, Nashville, Tenn., and Frieda J. Breeding, Executrix, assignors to Breeding Insulation Company, Inc., Nashville, Tenn.

Filed June 3, 1968, Ser. No. 734,017
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—3 4 Claims



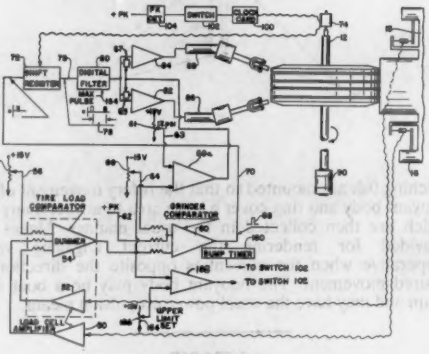
Abrasive means are employed to shape covers for conduit fittings from blocks of insulation material, illustratively foam plastic or fiberglas. The covers are formed in half sections and are employed in pairs; and

Apparatus for use in a system of forming insulation for pipe fittings such as elbow and T-sections, the apparatus including a work support and a rotatable shaping element projecting thereabove, in which a block of insulation material is moved against the shaping element in a controlled path of travel.

3,574,973
TIRE UNIFORMITY CORRECTION MACHINE

Edwin R. Rader, Tallmadge, Ohio, assignor to Information Development Corporation, Akron, Ohio

Filed July 2, 1968, Ser. No. 741,934
Int. Cl. B24b *49/00*
U.S. Cl. 51—165 8 Claims

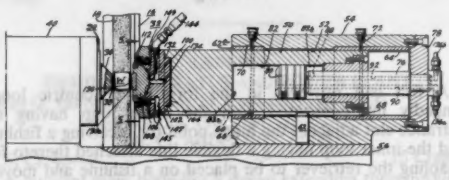


Grinder heads are moved into position under control of a closed loop servosystem to follow at a predetermined distance above the surface of the tire periphery. The tire runs against a pilot or road wheel having load cell detections to determine radial force variation in the tire under loaded conditions. Force channels obtaining signals from the load cells provide correction signals to the grinder head servosystem which is updated each tire revolution actuating the grinders to cut small segments from the surface of the tire to cancel out to at least a predetermined minimum the radial force vibrations.

3,574,974
HYDROSTATIC WORK SUPPORT MEANS FOR GRINDERS

Otto Weissing, Towson, Md., assignor to SKF Industries, Inc., King of Prussia, Pa.

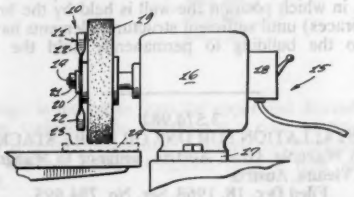
Filed May 15, 1968, Ser. No. 729,204
Int. Cl. B25b *5/00*; B24b *5/00*
U.S. Cl. 51—237 8 Claims



Work support means for grinder having a rotatable grinding wheel comprising a pair of hydrostatic workheads having confronting workpiece engaging members adapted for relative axial movement to support a workpiece. At least one

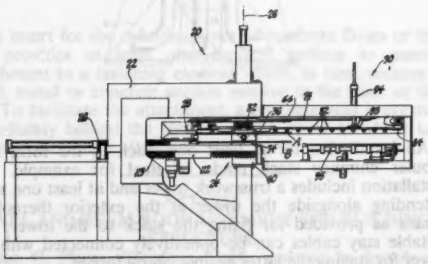
of the workheads includes a support member having a part-spherical seat, a clamping member having a part-spherical face contoured to conform to said seat which is enlarged to define a small part-spherical chamber for fluid under pressure. Means is provided for mounting the clamping member for a limited universal movement relative to the support member thereby allowing accurate alignment of the workpiece relative to the axis of rotation of the grinding wheel.

3,574,975
DRY GRINDING WARP PREVENTER
Erich P. Liss, 147 Bryan Hill Road, Milford, Conn.
Filed Nov. 13, 1967, Ser. No. 682,398
Int. Cl. B24b *55/02*
U.S. Cl. 51—266 **1 Claim**



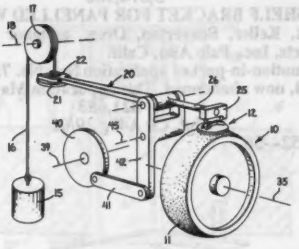
A fan unit securable to a grinding wheel of a grinder, the fan providing a cooling breeze directed against the surface being ground, so to keep down the temperature thereof and resultant warpage of the work.

3,574,976
METHOD FOR CUTTING AND GRINDING GLASS
Harold A. McMaster, Woodville, Ohio, assignor to Permaglass, Inc., Millbury, Ohio
Filed Feb. 5, 1968, Ser. No. 702,978
Int. Cl. B24b *1/00;* **B26d** *7/06*
U.S. Cl. 51—283 **20 Claims**



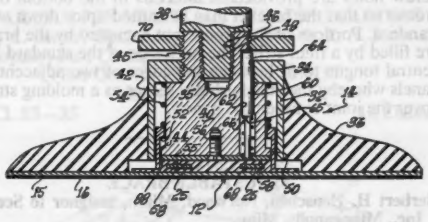
A method for sizing a sheet of glass wherein the sheet of glass is disposed in a predetermined position on an axis and rotated relative to a cutting means so that the sheet is cut in a predetermined peripheral pattern relative to the axis and wherein the sheet is maintained in the same predetermined position relative to the axis (i.e., the axis passes through the same point in the sheet) while the sheet is again rotated relative to a grinding means so that the periphery of the cut sheet is ground.

3,574,977
PROCESS OF FORMING A LENS BLANK
John D. Spragg, Indianapolis, Ind., assignor to Textron Inc.
Original application Sept. 29, 1966, Ser. No. 582,931, now Patent No. 3,449,198, dated June 10, 1969. Divided and this application Sept. 16, 1968, Ser. No. 759,989
Int. Cl. B24b *1/00*
U.S. Cl. 51—284 **3 Claims**



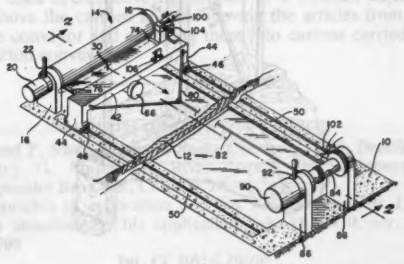
A method of forming a lens wherein a lens blank is ground on its concave side while mounted by a glass nubbin formed integrally with the lens blank on the convex side thereof.

3,574,978
MEANS TO RELEASABLY ATTACH AN ABRASIVE DISK TO A ROTARY DRIVER
Aleck Block, Los Angeles, Calif., assignor to Merit Abrasive Products, Inc., Los Angeles, Calif.
Filed July 16, 1969, Ser. No. 842,254
Int. Cl. B24b *17/00*
U.S. Cl. 51—377 **21 Claims**



For releasably mounting an abrasive disc on a rotary driver that has angular driving fingers, a molded hat-shaped plastic hub on the back of the disc has inclined webs for engagement by the fingers with tightening action, the webs being reinforced by integral ribs and a central boss.

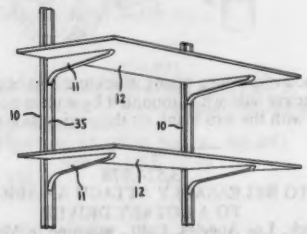
3,574,979
INFLATABLE COVER
John Y. S. Chan, 10065 Elm Ave., Loma Linda, Calif.
Filed June 6, 1969, Ser. No. 830,974
Int. Cl. E04g *11/04*
U.S. Cl. 52—2 **14 Claims**



A cover is formed of a sheet of substantially liquid impervious flexible material. The sheet of material is wound

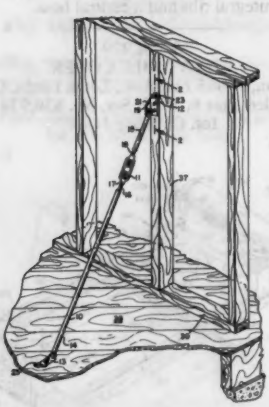
upon a support means, and one end of the sheet of material is secured to a movable carriage. Drive means is connected with the carriage for selectively moving it toward and away from the support means. Inflatable means in the form of tubular members are secured to the underside of the sheet of material, and means is provided for selectively inflating and deflating the inflatable means.

3,574,980
SHELF BRACKET FOR PANELLED WALLS
James R. Keller, Beaverton, Oreg., assignor to Woodcarve Products, Inc., Palo Alto, Calif.
Continuation-in-part of application Ser. No. 758,824, Sept. 10, 1968, now abandoned. This application May 5, 1969, Ser. No. 821,683
Int. Cl. A47g *29/02*
U.S. Cl. 52—36 **2 Claims**



A wooden construction is disclosed comprising a bracket supported by a single screw in a grooved vertical standard. The groove prevents the bracket from twisting on the screw. Screw holes are provided at intervals in the bottom of the groove so that the bracket may be shifted up or down on the standard. Portions of the groove not occupied by the bracket are filled by a filler strip. The back side of the standard has a central tongue to fit between the edges of two adjacent wall panels whereby the standard also serves as a molding strip to cover the joint between the panels.

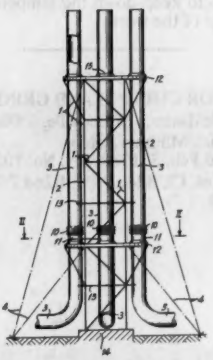
3,574,981
ADJUSTABLE BRACE
Herbert H. Henschen, Norwood, Minn., assignor to Scepter, Inc., Minneapolis, Minn.
Filed Sept. 25, 1968, Ser. No. 762,535
Int. Cl. E04g *25/06, 21/26*
U.S. Cl. 52—127 **10 Claims**



An adjustable brace for use by carpenters in the erection and plumbing of vertical walls during construction is disclosed. The brace comprises an elongated strut with a hinged wall anchor at one end and a hinged floor anchor at the other. This strut is suitably formed of two tube or pipe members of unequal length in end-to-end alignment and coupled together near the wall anchor end by a turnbuckle. When adjusted to its maximum length by manipulation of the turnbuckle, the strut is between 6 and 11 feet in length; and when adjusted to its minimum length, the strut is between 5 and 9 feet in length. Preferably it is about or approximately 8 feet in length, with its length adjustable over a span of at least 2 inches. At least one of the pivotally hinged anchors of the adjustable brace is characterized by having a lift-lip member under which the claw of a carpenter's hammer is easily inserted to pry the anchor from a temporarily nailed position.

In use, the wall anchor of one or more braces is temporarily nailed to a frame member of a preform structure designed for placement as a vertical wall in a building. Then the wall is placed in an estimated approximately plumb vertical orientation; and the floor anchors are temporarily nailed to the floor of the building. Turnbuckle adjustment is accomplished to place the wall in a true plumb vertical position, in which position the wall is held by the brace (or several braces) until sufficient structural elements have been added to the building to permanently hold the wall in position.

3,574,982
INSTALLATION FOR ONE OR MORE STACKS
Friedrich Wakonig, Graz, Austria, assignor to Waagner-Biro A. G., Vienna, Austria
Filed Dec. 18, 1968, Ser. No. 784,695
Claims priority, application Austria, Dec. 19, 1967, 11429/67
Int. Cl. E04h *12/10, 12/28*
U.S. Cl. 52—148 **7 Claims**

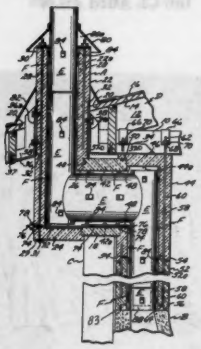


An installation for at least one stack in the form of a tubular chimney stack made of steel for example. The installation includes a trusswork tower and at least one stack extending alongside the tower at the exterior thereof. A means as provided for fixing the stack to the tower, and suitable stay cables can be operatively connected with the tower for staying the latter against lateral forces.

3,574,983
COOL WALL MODULAR CHIMNEY
Peter A. Kreider, 1307 Denice Court, and Richard D. Pepworth, 639 Cottonwood Drive, Brea, Calif.
Filed Feb. 10, 1969, Ser. No. 797,752
Int. Cl. E04d *13/14;* **E04f** *17/02*
U.S. Cl. 52—219 **9 Claims**

A free standing cool wall chimney that is formed from a number of modular sections of thermal insulation material which may be supported in whole or in part from a roof structure. The chimney is particularly adapted for use with a preformed fireplace, and surrounds a flue pipe that extends

upwardly from the fireplace to cooperate with the flue pipe to define an annulus-shaped passage therein. Air is admitted into the lower portion of the passage to be subsequently heated by the flue pipe. The heated air moves upwardly in



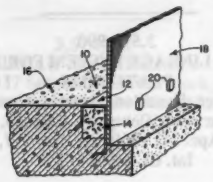
the passage to discharge from the upper end thereof, and in so doing, maintains the chimney in a cool condition. The chimney is further maintained in a cool condition due to the sections thereof being fabricated from a heat insulation material.

3,574,984

CORNER INSERT DEVICE

Ignatius A. Chap, Oak Lawn, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Feb. 10, 1969, Ser. No. 797,793
Int. Cl. E04b *2/72; E04c 3/29*
U.S. Cl. 52—374 **7 Claims**



An insert for the outside corner of concrete floors or the like provides at least one exposed surface to permit attachment to a fastening element which, in turn, secures a wood, metal or concrete section relative to the floor or the like. To facilitate the attachment, a concrete void is created immediately behind the surface of the insert to which the fastening element is attached.

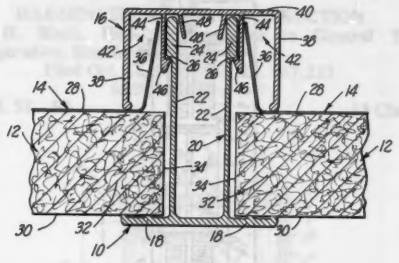
3,574,985

PANEL AND BEAM ROOF ASSEMBLY FOR BUILDING STRUCTURE

William C. Pierce, Glendora, Calif., assignor to Joseph A. Garcia, Encino, Calif., fractional part interest to each and Roy C. Garcia, Panama City, Panama, fractional part interest to each

Continuation-in-part of application Ser. No. 679,903, Nov. 1, 1967, now abandoned. This application Feb. 28, 1969, Ser. No. 803,194
Int. Cl. E04d *3/366*
U.S. Cl. 52—463 **2 Claims**

A horizontal beam of inverted generally T-shpaed vertical cross section supports edge portions of generally horizontal roof panels on transversely oppositely depending base flanges of said beam with a beam central web portion projecting upwardly between said panel edge portions, preferably in the form of transversely spaced vertical webs. Water proof upper layers of shape self-sustaining material are portioned over the panel upper surfaces and have edge portions which project upwardly from the panel edge portions and terminate spaced upwardly from said panel edge portions. An inverted U-shaped cap is positioned over the beam webs and has downwardly projecting leg portions transversely outwardly of the edge portions of the panel upper layers, said leg portions terminating downwardly overlying said panel upper layers.



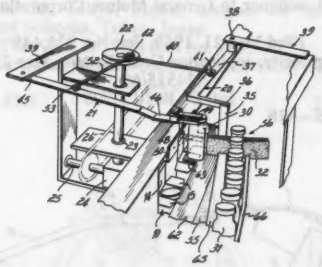
Transversely spaced webs project downwardly from the cap internally thereof and hook engage the beam webs retaining the cap and beam in assembly, with angled guides preferably being formed on the cap for guiding the beam webs into such assembly. Thus, the upwardly projecting edge portions of the panel upper layers provide water barriers internally of the cap for preventing water from flowing transversely into the assembly and downwardly along the inner edges of the panels.

3,574,986

APPARATUS FOR VERTICALLY LOADING CARTONS

Julian A. Dieter, Cincinnati, Ohio, assignor to R. A. Jones & Company, Inc., Covington, Ky.

Filed Oct. 14, 1968, Ser. No. 767,157
Int. Cl. B65b *5/04*
U.S. Cl. 53—35 **18 Claims**



Method and apparatus for conveying cartons with their upper ends open, conveying articles to a location adjacent and above the cartons and for moving the articles from the article conveyor and dropping them into cartons carried on the carton conveyor.

3,574,987

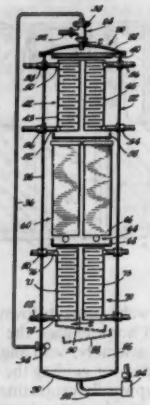
VACUUM DEAERATOR DEVICE

Sigmund P. Skoli, Elmwood Park; Chester J. Witt, Deerfield; Harry G. Mojonnier, River Forest, Ill., assignors to Mojonnier Bros. Co., Chicago, Ill.

Continuation of application Ser. No. 738,704, June 30, 1968, now abandoned. This application Feb. 18, 1970, Ser. No. 12,900
Int. Cl. B01d *19/00*
U.S. Cl. 55—193 **2 Claims**

A vacuum deaerator including an enclosed, evacuated housing having an inlet at the upper end thereof and an

outlet at the lower end. The deaerator includes a series of plate assemblies mounted within the housing in superposed relationship, as follows: a first, heating assembly mounted immediately below the inlet to heat incoming liquid to a predetermined temperature; a second assembly which receives the heated liquid from the first assembly to expose



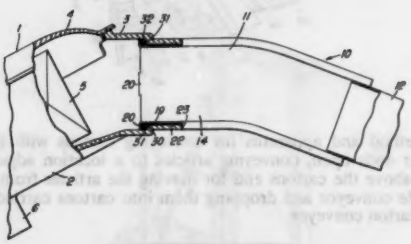
said liquid to the vacuum established within the housing and thereby thoroughly deaerating said liquid; and a third, cooling assembly disposed beneath the second assembly which receives the deaerated liquid and cools same to a predetermined temperature in preparation for carbonation of said liquid.

3,574,988

AIR FILTERS

Kenneth Ernest Buckman, Windsor, near Woodlands, England, assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1969, Ser. No. 826,449
Claims priority, application Great Britain, May 22, 1968, 24515/68
Int. Cl. B01d *27/08*
U.S. Cl. 55—418 2 Claims



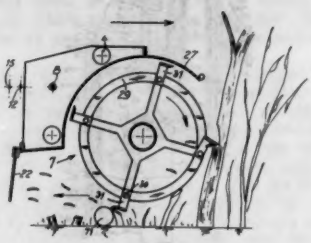
In order to enable the air intake tube of an air cleaner and silencer to be moved to a warm air or a cold air position the air intake tube and a spigot on the air cleaner casing have cooperating shoulders between which a circular spring is interposed and the end of the intake tube and the spigot have interengageable castellations by which the intake tube is secured against rotation from one position by the action of the spring but can be pulled axially to disengage the castellations and permit rotation of the tube to another position relative to the cleaner casing.

3,574,989

ROTOR-TYPE GRINDER

Louis Rousseau, and Joseph Rousseau, 8, Avenue August Wissel, Neuville sur Saone, Rhone, France

Filed June 12, 1967, Ser. No. 645,184
Int. Cl. A01d *35/24*
U.S. Cl. 56—10.7 5 Claims



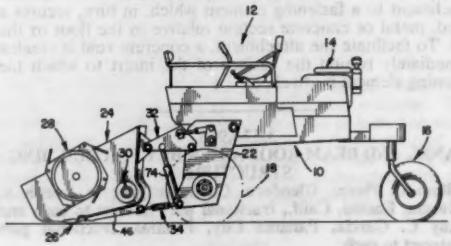
Rotor-type grinder attachable to a tractor and the like vehicle, for carrying at the end of a supporting arm a rotary grinder for chopping parasitic vegetation and the like. Mechanisms are provided for adjusting the position of the tool relative to the vehicle and the soil. The supporting arm has a telescoping system actuated by hydraulic cylinders, for moving the tool toward and away from the vehicle. A gear system is provided for imparting rotational movement to the tool with respect to the supporting arm. Preferably, a linkage is secured between the vehicle and a portion of the arm, intermediate the vehicle and the tool, and hydraulic cylinders for adjusting the angular position of the linkage and thereby raising the lowering the tool together with the arm.

3,574,990

SUPPORT AND LINKAGE SYSTEM FOR HARVESTER PLATFORMS

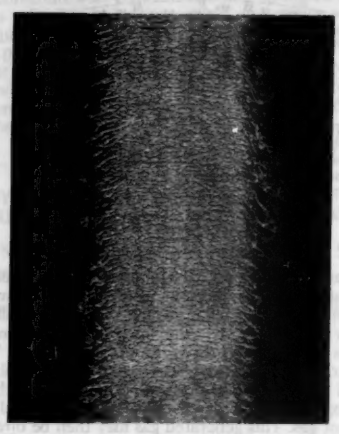
Robert A. C. Calder, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 21, 1969, Ser. No. 817,748
Int. Cl. A01d *67/00*
U.S. Cl. 56—208 10 Claims



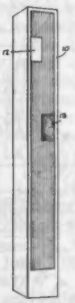
A self-propelled windrower having a wheeled frame and a harvester platform disposed forwardly of the frame for cutting and swathing a crop. The platform is mounted on the frame by arm means and is movable vertically by hydraulic lift cylinders. The platform is floatably suspended by torsion bar assemblies which are interconnected between the frame and arm means.

3,574,991
MULTIFILAMENT SYNTHETIC YARN PRODUCTS
Thomas T. Constantine, South Easton, Mass., assignor to Fabric Research Laboratories, Inc., Dedham, Mass.
Filed Feb. 17, 1969, Ser. No. 799,684
Int. Cl. D02g 3/24
U.S. Cl. 57—140 4 Claims



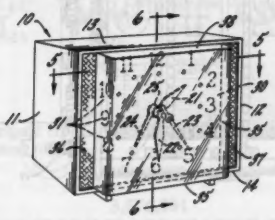
Multifilament, thermoplastic, synthetic yarn has acute angled pleats substantially in a single plane as a result of being formed into a flat pleated ribbon composed of a series of adjacent such yarns and being thereafter dissociated from said ribbon form by separating the individual yarns. The characteristics of the ribbon as an intermediate useful product are described as well as the method for making the pleated ribbon.

3,574,992
LINEAR TIME COLUMN
George T. Ladas, 937 Second Ave., New York, N.Y.
Filed Oct. 13, 1969, Ser. No. 865,641
Int. Cl. G04c 19/30
U.S. Cl. 58—50 5 Claims



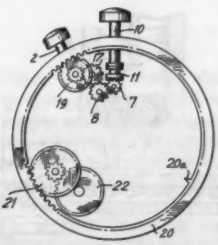
A linear time display clock in the form of a column having a translucent face behind which is a vertical stack of 11 cells. Electric bulbs in the cells are selectively activated by an electrical control circuit operated by a timer, whereby the cells are sequentially illuminated to provide a colored panel on the face of the column whose position is indexed linearly to indicate the passage of time. The hours one to 11 are indicated by illumination of cells one to 11, respectively, going from top to bottom, whereas the 12th hour (noon and midnight) is indicated by again illuminating the sixth or midpoint cell, the distinction between the sixth and 12th hour being established by a difference in panel color. Five-minute increments, which are 11 in number, running from five minutes to 55 minutes, are indicated by sequentially illuminating cells one to 11, but in a color distinct from the hour indications.

3,574,993
ILLUMINATED CLOCK CONSTRUCTION
John H. Black, Hull, Ga., assignor to General Time Corporation, Stamford, Conn.
Filed Oct. 17, 1969, Ser. No. 867,227
Int. Cl. G04b 19/30
U.S. Cl. 58—50 13 Claims



A compact illuminated clock intended for constant illumination which includes an especially constructed transparent light diffuser for diffusing light evenly to a translucent dial, the diffuser having an integral rearwardly extending wing for mounting a low intensity lamp, a transparent lens in front of the dial, and adjacent side panels formed with a pattern of pyramidal embossments which pick up the incident light to produce a jeweled appearance during the day and which are illuminated by the diffuser at night.

3,574,994
WHEEL TRAIN OF ALARM WATCHES
Tadahiro Kikuchi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Jan. 2, 1969, Ser. No. 789,115
Claims priority, application Japan, Jan. 5, 1968, 43/441
Int. Cl. G04b 23/00
U.S. Cl. 58—57.5 2 Claims

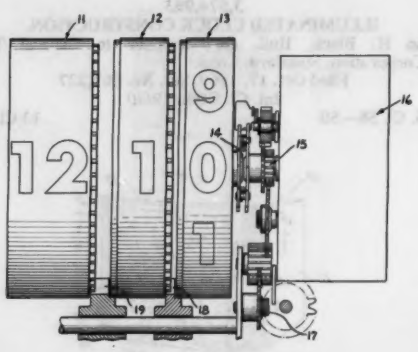


An improved alarm watch having a second hour wheel rotatably mounted on an arbor spaced from the center of said watch and operatively coupled to the hour wheel of said watch for rotation thereby. Said watch includes an unlocking wheel also rotatably mounted on said arbor and in operative engagement with the alarm setting wheel for rotation thereby. The unlocking wheel is provided with a plurality of projections adapted for registration with like apertures formed in said second hour wheel, said unlocking wheel being displaceable longitudinally along said arbor when said projections are in registration with said apertures for the actuation of the alarm hammer.

3,574,995
DIGITAL TIMEKEEPING DEVICE WITH IMPROVED INDEXING MECHANISM

Vernon P. Turner, Davidson, N.C., assignor to General Time Corporation

Filed Oct. 8, 1969, Ser. No. 864,585
Int. Cl. G04b 19/02
U.S. Cl. 58—125 6 Claims

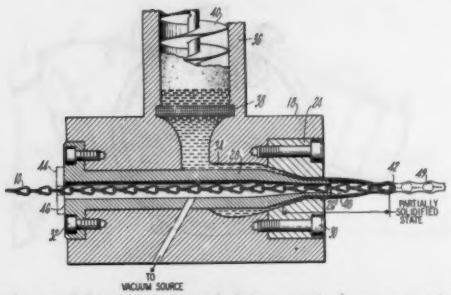


A time-keeping device providing digital visual indication of the time. Indexing means are provided to permit digital visual indication of the time in terms of full integers. The indexing means utilized includes a cam wheel and an index wheel, the camming surfaces of the cam wheel being sloped in reverse of the ratchet teeth of the index wheel. A pawl is provided to engage the ratchet teeth of the index wheel until released by the camming surfaces of the cam wheel whereupon the index wheel rotates as a result of being continuously urged to rotate in the same direction as the cam wheel. The rotation of the index wheel is limited to a predetermined angular amount by means acting between the two wheels. Means are provided for permitting setting and adjustment of the indexing mechanism in order to cause the indicating means to permit visual observation of the correct time.

3,574,996
TUBULAR SHEATHED CHAIN

August W. Loos, Rte. 169, Pomfret, Conn.

Filed Jan. 17, 1969, Ser. No. 791,926
Int. Cl. B21l 11/00
U.S. Cl. 59—78 2 Claims

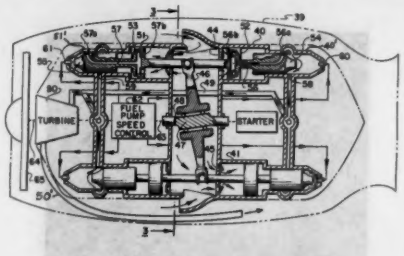


A tubular sheathed chain having an undulate sheath conforming to links of the chain and continuously urging it toward a fully extended condition, while maintaining its flexibility which if formed by extruding a tubular plastic sheath about a link chain being fed along a path and continuously collapsing the sheath at a predetermined point in the path downstream of a sheath forming station such that the sheath is collapsed into contact about the chain while in a relaxed plastic condition.

3,574,997
HIGH PRESSURE HOT GAS GENERATOR FOR TURBINES

Gerald H. Syrovy, 1321 Georgina Ave., Santa Monica, Calif.

Filed Mar. 26, 1969, Ser. No. 810,453
Int. Cl. F02b 37/04; F02k 5/02
U.S. Cl. 60—13 2 Claims



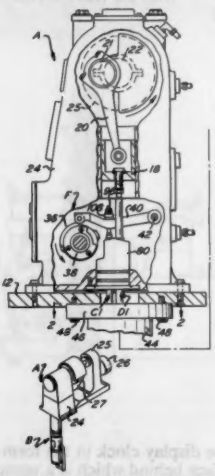
A constant displacement air compressor is combined with a reciprocating type combustion chamber utilizing a modified diesel cycle process in such a manner that substantially all of the power developed by the reciprocating combustion chamber is employed to drive the air compressor. The air compressor in turn provides scavenging air to displace the combusted gases in the reciprocating combustion chamber, the scavenged air and gases constituting extremely high-pressure hot gas. This generated gas may then be directed to drive a turbine, power from the system for external work being derived from the turbine.

This invention relates generally to power plants for both mobile including aircraft and boats and stationary use and more particularly to a high-pressure hot gas generator for driving turbines.

3,574,998
CRYOGENIC EXPANSION ENGINE

Hans Von Bredow, Worthington, and William W. Vogelhuber, Columbus, Ohio, assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 5, 1969, Ser. No. 821,879
Int. Cl. F01b 31/00; F01k 25/00; F25d 9/00; F25b 9/00
U.S. Cl. 60—36 6 Claims



A cryogenic gas-expansion engine which includes a cold end having a piston reciprocable within a cylinder and valves controlling the admission and exhausting of gas from the cylinder so as to effect isentropic expansion of the gas within

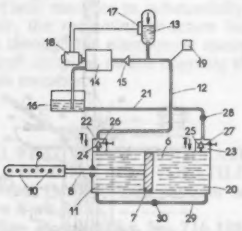
the cylinder, and a warm end with means for transforming reciprocating motion into rotary motion. The piston rod and the valve-lifting rods include long tubular intermediate portions to inhibit conduction of heat from the warm-end to the cold-end cylinder. Both the piston rod as well as the valve-lifting rods are all stressed in tension during the actuating portion of their strokes to prevent compressive forces which might buckle the tubular portions. The intake valve constitutes an outward opening spring-closed poppet with its valve head abutting against an exterior seat outside the cylinder. The exhaust valve is an inward opening spring-closed poppet whose head abuts an interior seat within the cylinder. An exhaust rod rocker arm converts the tensioning force which actuates the exhaust valve to a compressive force on the solid shank of the valve stem in order to push open the exhaust valve.

3,574,999

SYSTEM FOR CONTROLLING A TENSIONING CARRIAGE FOR A TRACTION CABLE FOR AN INGOT TRUCK

Andre Nectoux, Le Creusot, France, assignor to Societe Des Forges Et Ateliers Du Creusot, Paris, France

Filed Apr. 11, 1969, Ser. No. 815,480
Claims priority, application France, May 6, 1968, 150649
Int. Cl. F03c *1/16*
U.S. Cl. 60—51 **1 Claim**



This invention relates to steelworks installations provided with an ingot truck drawn by a cable. The invention relates to the system for controlling the cable-tensioning carriage. It is characterized in that the said system comprises a hydraulic jack whose two elements, i.e. cylinder and piston, are respectively connected to a fixed part of the installation and attached to the tensioning carriage, one of the jack chambers communicating with a pressure circuit while the other chamber communicates with a liquid tank via two conduits each containing a valve which opens completely to supply the corresponding chamber and closes partially to allow liquid to escape from said chamber, means for limiting the rate of flow being provided for such escape. This system eliminates any danger of cable oscillation.

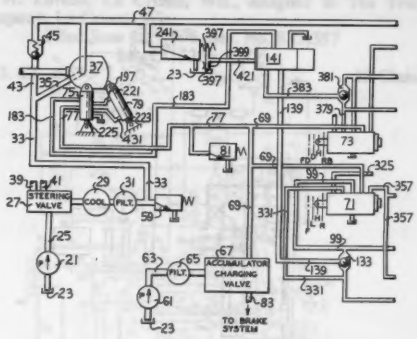
3,575,000

HIGH PRESSURE IMPLEMENT HYDRAULIC CIRCUIT

John L. Hufeld, Peoria; Donald J. Larson, Joliet; Howard A. Marsden, Pekin; James P. Mueller, East Peoria, and William B. Norick, Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of application Ser. No. 814,003, Apr. 7, 1969, now abandoned. This application Oct. 21, 1969, Ser. No. 868,964
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 **17 Claims**

A relatively low pressure hydraulic control system for a high pressure work output system in which a control valve is selectively actuated to position a variable displacement axial piston pump to control the flow in the work output system and to position a directional valve which controls the direction of work output. In such a system wherein two work outputs are provided, thereby requiring two control valves, a priority valve may be utilized in the low pressure system so that a signal from one of the control valves will always



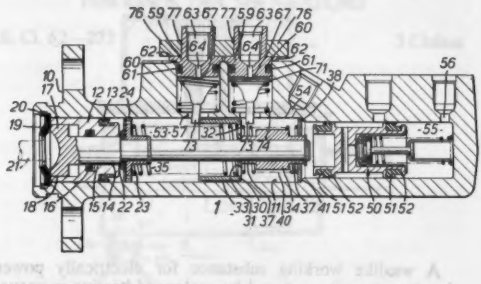
override a signal from the other control valve in controlling the axial piston pump.

3,575,001

MASTER CYLINDER FOR BRAKING SYSTEMS

Alexander J. Wilson, and Stuart B. Dawson, Warwickshire, England, assignors to Girling Limited, Birmingham, England

Filed June 16, 1969, Ser. No. 833,619
Claims priority, application Great Britain, June 14, 1968, 28,298/68
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 **14 Claims**



In a master cylinder a spring loaded tilting valve controls communication between a source of fluid, such as a reservoir of high pressure supply, and a pressure space in the cylinder, and the tilting valve comprises a head member mounted on the upper end of a stem. The head member is adapted to seat against a valve seating member surrounding a port for connection to the source of fluid, and an annular projection is provided on one of the members for engagement with a complementary surface on the other member.

3,575,002

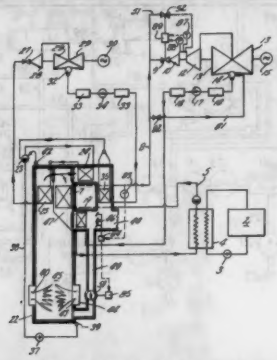
COMBINATION FOSSIL FUEL AND SUPERHEATED STEAM NUCLEAR POWER PLANT

Romul E. Vuia, Laval Sur Le Lac, Quebec, Canada, assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Jan. 3, 1966, Ser. No. 518,065
Claims priority, application Canada, June 15, 1965, 933,371
Int. Cl. F01d *13/00*
U.S. Cl. 60—102 **30 Claims**

A power plant arrangement including a nuclear reactor generating steam at a low and generally saturated temperature. A fossil-fuel fired steam generator having steam

generating tubes lining the furnace walls includes a flue which contains superheater surface. Steam generated by the nuclear reactor at low temperature flows through the



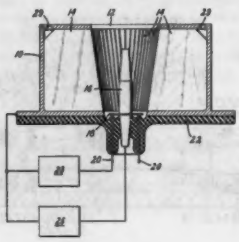
superheater surface located in the flue of the fossil-fuel fired steam generator to be superheated and then conveyed to a turbine.

3,575,003

SEMISOLID PROPELLANT AND THRUSTOR THEREFOR

Aldo V. LaRocca, Villanova, Pa., assignor to General Electric Company

Filed Oct. 29, 1968, Ser. No. 771,570
Int. Cl. F02k *7/08*
U.S. Cl. 60—203 **7 Claims**



A waxlike working substance for electrically powered thrust engines is produced by prolonged heating in vacuo of liquid or soft grease per fluorocarbon polymers. This product flows very readily under surface tension, through tapering passages, moving slowly in its waxlike condition, and more rapidly when heated and so more fluid. It ablates with no residue. These properties permit optimal operation of a thrustor in which fuel is fed radially inward between radially oriented planar electrodes to a central cylindrical or conical aperture.

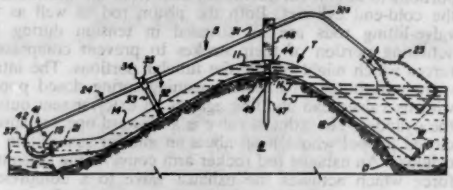
3,575,004

SIPHON TUBE CONTROL DEVICE AND SYSTEM

Bernard J. Gachne, 320 E. Sixth St., and Harlan R. Carlson, 815 Meeker St., Fort Morgan, Colo.

Filed Dec. 16, 1968, Ser. No. 784,033
Int. Cl. E02b *08/06*
U.S. Cl. 61—18 **16 Claims**

A control device for a siphon tube regulates the liquid flow through the tube to provide self-priming for the tube and a level control for the liquid supply to the tube. The device includes a valve at the tube outlet and a valve actuating mechanism constructed and arranged to change the valve setting in response to a predetermined liquid level at the tube inlet for alternately stopping and starting the liquid flow through the tube. When a lower liquid level at the tube inlet is reached, the valve is moved to stop the flow and trap a



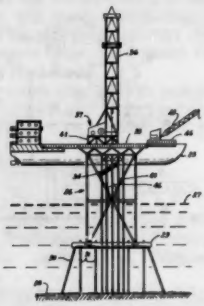
column of liquid in the tube and the valve is moved to release the column to prime the tube at a higher liquid level at the tube inlet to start the flow through the tube.

3,575,005

METHOD AND APPARATUS FOR OFFSHORE OPERATIONS

Maurice N. Sumner, #1 Chelsea Place, Houston, Tex.

Filed June 29, 1967, Ser. No. 649,889
Int. Cl. E02b *17/04;* **E02d** *21/00;* **B63c** *7/04*
U.S. Cl. 61—46.5 **25 Claims**



In the erection of offshore structures, preferred method steps including releasably securing a vessel adapted for wate. navigation to a structure, said structure being adapted to be stabilized at selected locations of various depths wherein stabilization enables mineral-related, military, and transportation apparatus to function from said structure, altering the elevation of the vessel with respect to the structure whereby the vessel is made more free of wave action at the altered elevation and thereafter restoring the vessel to a navigable relationship to the body of water; said invention including apparatus for supporting a separable structure wherein the support immediately below the structure is designed principally with support of the structure in view and extends downwardly to a footing member, wherein support members below said footing member are founded in the soil beneath the body of water and are designed principally as foundation members.

3,575,006

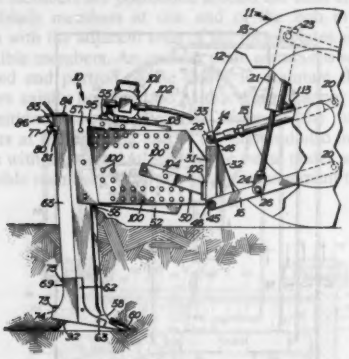
UNDERGROUND CABLE-LAYING APPARATUS

Roger R. Rugroden, Circle Pines, and David H. Peterson, Elk River, Minn., assignors to Tel-e-elect, Inc., Minneapolis, Minn.

Filed Sept. 20, 1968, Ser. No. 761,119
Int. Cl. A01b *3/64, 11/00;* **F16l** *1/00*
U.S. Cl. 61—72.6 **26 Claims**

The structure disclosed is directed to a vertical support mechanism which is generally driven and controlled through a three-point hitch of a prime mover, the mechanism being secured to a first pair of vertical plates that are pivotally secured to the vertical support mechanism at the front portions of the plates, the vertical plates being secured to a

second pair of inwardly spaced plates through a plurality of elastomeric mounting and draft members and the inner vertical plates securing a blade member thereto at its upper end, the blade member being drawn through the earth at a depth sufficient to lay a cable therein after passing through a cable guide secured to the trailing edge of the blade member,



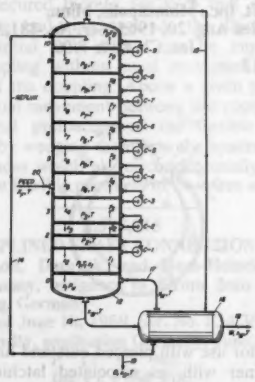
the cable entering the guide from above the earth. A vibrator is secured to the blade member to substantially vibrate the blade member only, the remaining structure being isolated from the vibration through the elastomeric mountings which also serve as the draft coupling means coupling the mounting support to the blade member.

3,575,007

ISOTHERMAL FRACTIONAL DISTILLATION OF MATERIALS OF DIFFERING VOLATILITIES

Arnold Gunther, West Orange, N.J., assignor to Treadwell Corporation, New York, N.Y.

Filed Mar. 26, 1968, Ser. No. 716,188
Int. Cl. B01d *3/00;* **F25j** *3/02*
U.S. Cl. 62—26 **5 Claims**



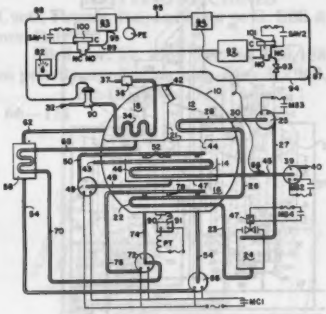
Fractional distillation, i.e., separation of materials of differing volatilities, is effected under substantially isothermal conditions as opposed to isobaric conditions in the ordinary fractional distillation column. Instead of maintaining substantially the same pressure in a column and varying the temperature in the different stages, as in the customary isobaric fractional distillation, the temperature is maintained substantially or relatively constant and vapors from the different stages are compressed and introduced into the next stage. In other words, there is relatively little change in temperature but a change in pressure from stage to stage. This results in more efficient distillation with much smaller increase in entropy in the system.

3,575,008

STEAM STARTUP STABILIZER FOR AN ABSORPTION REFRIGERATION MACHINE

John W. Lorenz, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed June 16, 1969, Ser. No. 833,357
Int. Cl. F25b *15/06*
U.S. Cl. 62—103 **13 Claims**



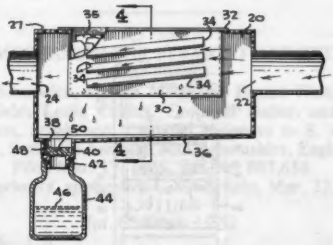
A control for cold starting absorption refrigeration machines first preheats the absorption solution and the machine mass, then switches over to conventional demand and normal control. The preoperational preheat cycle utilizes a preselected, usually constant, rate of heat input into the generator of the machine. The preoperational cycle is completed when the absorption solution in the absorber reaches a preselected temperature.

3,575,009

RAPID-ACTING WATER VAPOR CONDENSER

Nicholas Kooney, 6334 W. Rowland Ave., Littleton, Colo.

Filed June 6, 1969, Ser. No. 831,062
Int. Cl. F25d *21/00*
U.S. Cl. 62—272 **3 Claims**



A water vapor condenser for use with a home laundry clothes dryer including means providing a hollow primary chamber receiving the exhaust flow from the dryer and having a thin-walled chilling unit insertable in the chamber for condensing water vapor with the chill unit including a hollow interior for retaining a quantity of ice or other cooling medium and with a filter being provided in a drain from the primary chamber for filtering lint or other particles from the condensed water vapor as it is drained into a receptacle attachable to the drain.

3,575,010

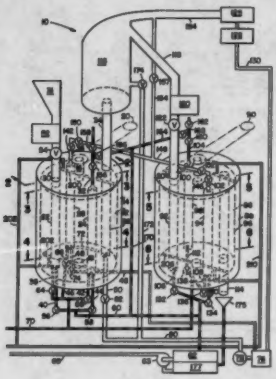
ROTATING DIRECT CONTACT LIQUID REFRIGERANT FREEZER

Charles Parker Honeyman, 2564 Chittenden Road, San Juan Bautista, Calif.

Filed Mar. 13, 1969, Ser. No. 806,916
Int. Cl. F25d *3/10, 25/04*
U.S. Cl. 62—375 **10 Claims**

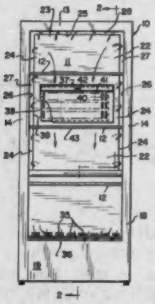
Disclosed herein is apparatus for freezing food by bringing it into direct contact with a liquid or vaporous refrigerant.

The apparatus includes rotor means having apertures therethrough, a quantity of food or other product being deposited into an aperture and then being carried with the rotor means as it rotates. Through such rotation, the food is brought into direct contact with the liquid refrigerant.



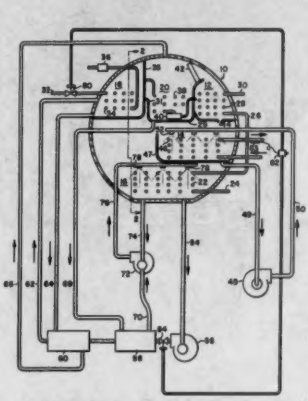
Meanwhile, the rotor means and other means associated therewith ensure that virtually no air enters the system, and virtually no liquid refrigerant, or vapor thereof, is lost from the system. The system is quite flexible and can be adapted to perform a variety of processes.

3,575,011
FORCED AIR FREEZER
Charles R. Dill, and Sylvester A. Winterheimer, Evansville, Ind., assignors to Whirlpool Corporation
Filed Feb. 18, 1969, Ser. No. 800,081
Int. Cl. F25d *17/04*
U.S. Cl. 62—408 **9 Claims**



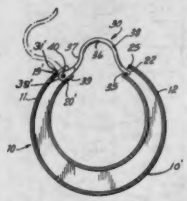
A refrigeration apparatus that has substantially uniform temperature throughout a storage enclosure in the apparatus comprising boundary walls defining the enclosure, an air duct substantially coextensive with a major portion of one of the walls and having edges adjacent others of the walls that are adjacent the one wall, peripheral discharge means at the air duct edges for directing air from the duct along the adjacent wall and toward a second wall that is directly opposite the one wall for flow of the discharge air along this second wall also, an air inlet adjacent one end of the duct for receiving air from the enclosure including the air that flows into the enclosure from along the second wall, means for forcing air through the air duct and means for refrigerating the duct air.

3,575,012
ABSORPTION REFRIGERATION SYSTEM HAVING TWO STAGE GENERATOR
David G. Peckham, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed Nov. 6, 1968, Ser. No. 773,844
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **7 Claims**



An absorption refrigeration system having a two stage generator, wherein the major components are contained in a single shell and wherein the refrigerant is released from the absorbent solution in two generating steps and steam substantially above atmospheric pressure is supplied to the first stage generator and the condensate therefrom is put in heat exchange with the absorbent in the second stage generator.

3,575,013
EARRING WITH PIVOTED RETAINER AND MEANS FOR STOPPING SAME
Michael Chernow, New York, and Joseph Chernow, New Rochelle, N.Y., assignors to said Michael Chernow assignor to Monocraft, Inc., Minneapolis, Minn.
Filed Aug. 20, 1965, Ser. No. 481,377
Int. Cl. A44c *7/00*
U.S. Cl. 63—12 **1 Claim**

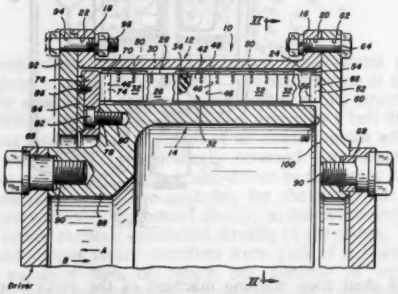


An earring for use with pierced ears and having a pivoted resilient retainer with an associated latching recess and means to guide the free end of the retainer thereinto, so as to insure the positive securement of the earring with respect to the ear. An abutment wall is provided to stop pivotal movement of the retainer as it moves to latched position.

3,575,014
TORSIONALLY AND AXIALLY FLEXIBLE COUPLING
John Wright, Catonsville, Md., assignor to Koppers Company, Inc.
Filed July 7, 1969, Ser. No. 839,152
Int. Cl. F16d *3/64*
U.S. Cl. 64—14 **10 Claims**

The flexible coupling includes an elongated sleeve with a plurality of radially extending elongated blades and a

cylindrical elongated hub with a plurality of radially outwardly extending blades. The sleeve is coaxially positioned on the hub member with the sleeve inwardly extending blades alternately interleaved between the outwardly extending blades of the hub member. Elongate flexible members having metal plates bonded to their sidewalls are positioned between the interleaved blade members. Sleeve channel members are positioned around the axial ends of the sleeve blade members at one end of the hub in abutting relation with the adjacent ends of the metal plates secured to the flexible members. An annular plate member is secured to a flanged end portion of the sleeve to maintain the elastic members axially between the blades. Hub channel members are positioned around the axial ends of the hub blade members at the opposite end of the hub and also in abutting relation with the adjacent ends of the metal plates secured to the flexible members. With the above arrangement the sleeve



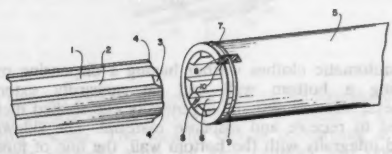
channel members and hub channel members abut opposite sides of the flexible members at opposite ends thereof. A retaining ring is secured to the hub in abutting relation with the hub channel members and an end ring is secured to an opposite flanged portion of the sleeve member in abutting relation with a thrust ring which is secured to the retaining ring. The dimensions of the sleeve member, the hub member, the channel members and the flexible members with the metal plates secured thereto are such that an axial force exerted on the end ring preloads the flexible members axially. Substantial axial thrust can be imposed on the preloaded coupling without axial movement between the components of the coupling. Above a given predetermined axial thrust, axial movement between the components takes place. Torsional preloading of the flexible members is accomplished by wedging them into the spaces between the interleaved blades which are circumferentially smaller than the width of the flexible members in their free state.

3,575,015

SPLINED SHAFT CONNECTION

Hubert Geisthoff, Donrath, and Hans-Heinrich Welschof, Geber, Germany, assignors to Firma Jean Walterscheid K.G., Sieburg, Germany

Filed June 18, 1969, Ser. No. 834,305
Claims priority, application Germany, June 21, 1968, P 17 50 948.7
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 **3 Claims**



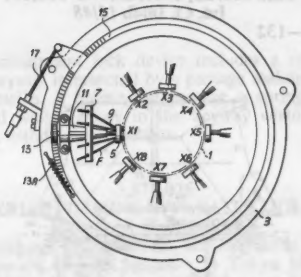
A shaft has external splines on an end thereof which interfit with internal splines formed in a socket in the end of a second shaft. At least one land of the external splines has a beveled end with the other land ends being square. A spring-loaded pin projects through a radial bore between lands of the internal splines. The pin functions as a spring detent and assures the correct angular relationship in assembling the splined shafts.

3,575,016

SELECTIVE YARN CHANGING DEVICE FOR CIRCULAR KNITTING MACHINES

Gianni Conti, Firenze, Italy, assignor to G. Billi & C. S. P. A., Florence, Italy

Filed Apr. 29, 1969, Ser. No. 820,158
Claims priority, application Italy, May 3, 1968, 4548/68
Int. Cl. D04b *15/08, 15/58*
U.S. Cl. 66—111 **6 Claims**



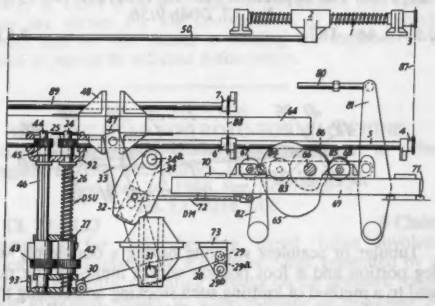
A yarn changer, especially for use at each feed of a multifeed circular ladies hosiery machine, having a yarn-feeding disc with a plurality of circularly spaced yarn-feeding holes therein with the disc being angularly oscillatable to selectively feed each of a like plurality of yarns to the needles. In each yarn changer the disc is mounted at one end of a rotatable rod upon the other end of which is mounted a spur gear and a ring gear is provided on the machine in mesh with the spur gears of the yarn changers at each of the feeds to commonly turn all the discs to commonly change the yarns being fed at all of the feeds of the machine.

3,575,017

DRAW MECHANISM FOR STRAIGHT BAR-KNITTING MACHINES

Barry F. Swanwick, Melton Mowbray; Ernest West, Kirkby in Ashfield; Leslie Collins, Cropwell Butler, and Ernest Chambers, Stapleford, England, assignors to S. A. Monk Limited, Sutton-in-Ashfield, Nottinghamshire, England

Filed Mar. 17, 1969, Ser. No. 807,658
Claims priority, application Great Britain, Mar. 22, 1968, 13911/68
Int. Cl. D04b *15/52*
U.S. Cl. 66—126 **12 Claims**



A straight-bar knitting machine including an asymmetric center differential unit incorporated into the gearing system

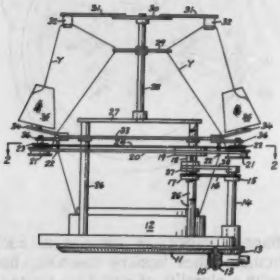
conveying from a variable linear draw mechanism normal reciprocatory movements to the carrier drive and the slur drive rack. This unit is operable from the selvedge screws so to adjust the carrier and slur drives that traverses thereof are asymmetric with respect to centerlines of the knitting heads, and the central points of these traverses are maintained coincident with centers of knitting widths. A draw shortening differential unit, associated with the draw mechanism and also operable from the selvedge screws, minimizes the constant overtravel of the slur cams beyond the yarn carriers.

3,575,018

YARN-FEEDING MEANS FOR KNITTING MACHINES

Nathan Levin, 722 Edgewood Ave., Trenton, N.J., and Thomas Anderson Oliver, Jr., 319 Summmit Ave., Jenkintown, Pa. 19046

Filed Feb. 25, 1969, Ser. No. 802,181
Int. Cl. D04b *15/48*
U.S. Cl. 66—132 **5 Claims**



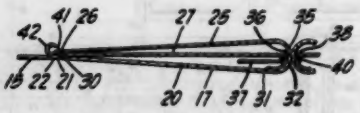
A yarn-feeding system for drawing off yarn from a plurality of cones thereof and for feeding the same to a multifeed knitting machine wherein a plurality of rotating yarn-feeding rollers each have a pulley atop thereof and wherein an endless garter spring drive band encircles each of the pulleys. In one form of the invention an endless tape is driven by the machine to drive the rollers, the pulleys and the endless spring drive band while in a second form the endless spring drive band is driven by the machine to drive the pulleys and the rollers. The yarns are encircled about the rollers a plural number of times in spaced relation by wrapping the yarns about the rollers and between the successive spread-apart coils of a spring, the yarns thereafter being fed from the end of the spring.

3,575,019

SEAMLESS STOCKING AND METHOD OF MAKING SAME

Richard M. Janda, Reading, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 779,733, Nov. 29, 1968. This application Feb. 10, 1969, Ser. No. 797,975
Int. Cl. D04b *9/56*
U.S. Cl. 66—187 **7 Claims**



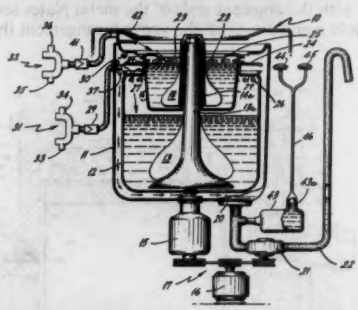
Tubular or seamless stocking having a double-ply welt, a leg portion and a foot portion with a multi-ply toe portion and to a method of knitting such stocking and closing the toe portion thereof on a circular knitting machine. The multi-ply toe portion includes first and second plies connected to the foot and a third ply enclosed within the first and second plies, the third ply having a draw yarn interlaced in courses adjacent the free end thereof which acts when partially withdrawn from the courses to gather the free end of the third ply into a tight bunch to close outer connected ends of the first and second plies.

3,575,020

LAUNDRY APPARATUS

James R. Hubbard, Moorestown, N.J., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Jan. 14, 1969, Ser. No. 791,074
Int. Cl. D06f *23/04, 33/02*
U.S. Cl. 68—4 **10 Claims**



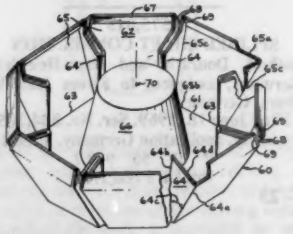
A dual zone washing machine of the vertical axis type including a generally cylindrical open-top stationary tub and a generally cylindrical open-top rotatable tub within the stationary tub. A removable tub of lesser size than the rotatable tub is supported in the latter tub upon its rim, and a vertically extending oscillatable agitator includes vane sections for both the rotatable and the removable tubs. Selectively controlled fluid handling means are operable to fill either the removable tub or the rotatable tub alone, or to fill both sequentially.

3,575,021

DISPENSING CUP HAVING SIDES WHICH UNFOLD UNDER CENTRIFUGAL FORCE

John Bochan, Louisville, Ky., assignor to General Electric Company

Filed Nov. 21, 1968, Ser. No. 777,771
Int. Cl. D06f *29/00*
U.S. Cl. 68—17 **6 Claims**



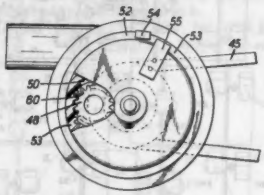
An automatic clothes washer having a dispensing means including a bottom wall and an upwardly extending peripheral sidewall defining a generally cup-shaped member adapted to receive and dispense material. The sidewall is formed integrally with the bottom wall, the line of juncture therebetween comprising a flexible hinge. By this arrangement, the sidewall will fold downwardly under the action of centrifugal force as the cup-shaped member is rotated to dispense the material radially outwardly.

3,575,022

ROTARY DRIVE ASSEMBLIES

Jonathan Peter Steele, London, England, assignor to The Hoover Company, North Canton, Ohio

Filed Apr. 23, 1969, Ser. No. 818,534
Claims priority, application Great Britain, Apr. 29, 1968, 20,226/68
Int. Cl. D06f 29/00
U.S. Cl. 68—24 8 Claims



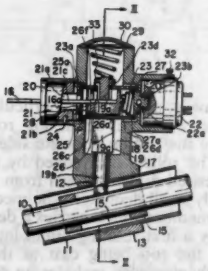
A tumbler-type washing machine has a horizontal axis rotary drum capable of periodically reversed rotation at slow speed for washing, or rotation at high speed in one direction for centrifugal extraction. The drum is driven by a belt drive extending directly from the shaft of an electric motor which during washing can be periodically reversed. An extraction pump for emptying the drum is also driven by the motor via a drive assembly. The drive assembly for the pump has an input rotary member connected directly to the motor and an output rotary member connected directly to the pump. The input and output rotary members form part of a train of rotary members two of which are capable of rotary movement with respect to one another through a lost motion arc during the periodical reversal of the motor. In this way the pump is not driven during the washing operation. When, however, cooperating shoulders on the said two of the rotary members of the train engage one another, after the members have been driven relatively to one another in either direction through an arc which is as great as the lost motion arc, the input member will drive the output member so as to drive the pump.

3,575,023

STEERING LOCKING DEVICE FOR MOTOR VEHICLES

Yasushi Shimizu, Ohmiya, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan and Kanto Seiki Company, Limited, Ohmiya City, Japan

Filed Oct. 22, 1969, Ser. No. 868,543
Claims priority, application Japan, Oct. 24, 1968, 43/77516
Int. Cl. B60r 25/02
U.S. Cl. 70—252 5 Claims



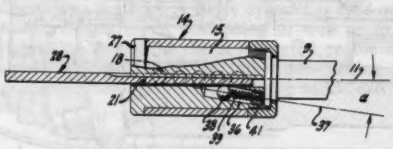
A steering locking device for locking the steering shaft of a motor vehicle having a lock cylinder rotatable by a key and locking means. The locking device comprising a control member rotatable with the lock cylinder and operatively connected with an ignition switch, and a rotary member cooperating with the control member to hold the locking means in the unlocked position irrespective of the position of the key and upon removal of the key locks the steering shaft.

3,575,024

KEY ENTRAPMENT LOCK DEVICE

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company

Filed Apr. 14, 1969, Ser. No. 815,832
Int. Cl. E05b 11/06
U.S. Cl. 70—389 10 Claims



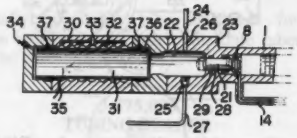
A key entrapment lock device includes a cylinder plug having a keyway intersected by a passage making a wedging angle therewith. A ball in the passage is spring pressed to engage and wedge a key in the keyway when the key is moved in a withdrawing direction.

3,575,025

MATERIAL FORMING APPARATUS UTILIZING HYDRAULIC PRESSURE

Hiroshi Tominaga, Tokohama-shi, and Masanobu Takamatsu, Yokohama-shi, Japan, assignors to Tokyu Sharyo Seizo Kabushiki Kaisha, Yokohama-shi, Kanagawa-Ken, Japan

Filed Oct. 20, 1965, Ser. No. 498,981
Claims priority, application Japan, Dec. 7, 1964, Jan. 14, 1965, Mar. 2, 1965, 39/68518;40/1591;40/11601
Int. Cl. B21d 26/04
U.S. Cl. 72—62 1 Claim



A pressure forming device comprises a liquid pressure chamber which communicates with a mold-forming member having a mold cavity into which an article to be formed is inserted. A plunger is mounted for sliding sealing movement in respect to a wall bounding or communicating with the pressure chamber so that it may be moved rapidly in an impulsive movement to displace liquid of the chamber against the member to be molded in the mold cavity to form it to the configuration of the cavity. Means are provided for regulating the movement of a hammer to strike the plunger member to move it in an impulsive movement, and various means are shown for the construction of a mold cavity member and for the means in holding the member to be molded to permit its selected deformation.

3,575,026

ROLLING HEAD FOR ROTO-FORM MACHINE

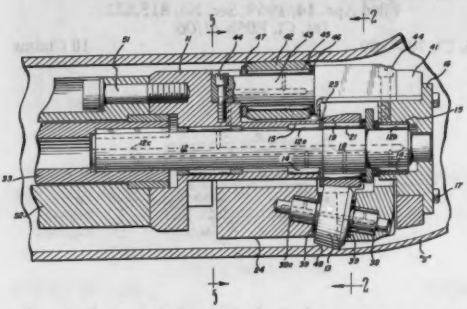
Constantin Troyanski, Cicero, Ill., assignor to Pines Engineering Co., Inc., Aurora, Ill.

Filed Jan. 24, 1968, Ser. No. 700,071
Int. Cl. B21d 1/08
U.S. Cl. 72—113 8 Claims

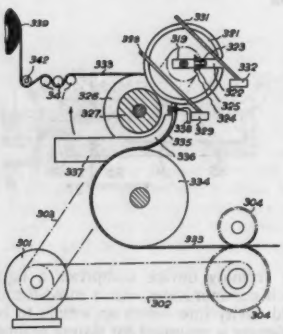
Apparatus for cold bending metal tubes involving application of pressure on a pressure roller generated by an oscillating eccentric operating directly on the pressure roller.

This invention relates to improvements in machines for cold bending of metallic tubes of relatively large diameter by applying rolling pressure to the inside wall surface of the tube over a specific area located on the portion of the tube in

which the other arc of curvature is generated so as to thin said wall portion by rolling pressure without appreciable alteration in the thickness of the opposite portion of the tube wall.



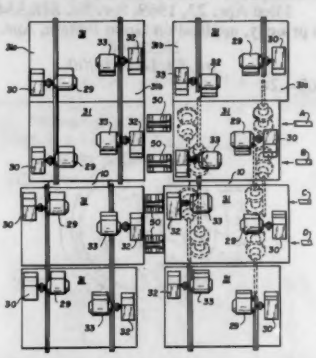
3,575,027
MANUFACTURE OF PATTERNED WEBS
Paul Eisler, 57 Exeter Road, London, England
Continuation-in-part of application Ser. No. 510,278, Nov. 29, 1965, now Patent No. 3,408,735, which is a continuation-in-part of application Ser. No. 165,736, Jan. 12, 1962, now Patent No. 3,283,284. This application Sept. 4, 1968, Ser. No. 757,353
Int. Cl. B21d *31/02, 47/04*
U.S. Cl. 72—186 31 Claims



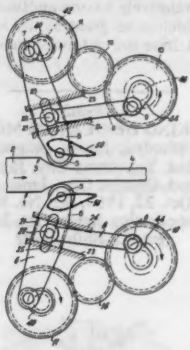
To produce lines of longitudinal slits the length of which can be varied in a regular pattern in a travelling web, suitably of metallic foil for the production of electric resistance heating films, a gapped knife for each limb which may be a rotating knife is given a cycle of movements, the gap remaining clear of the web at intervals to leave bridges between the slits and the longitudinal component of movement of the knife being variable to vary the length of the slits. The foil is supported on a grooved support and the knife may also fold the margins of the slit through 90°, these margins then being folded or crushed right over. The foil may be crimped and be insulated.

3,575,028
ROLLING MILLS
Werner W. Eibe, McCandless Township, Allegheny County, Pa., assignor to Blaw-Knox Company, Pittsburgh, Pa.
Filed Jan. 28, 1969, Ser. No. 794,598
Int. Cl. B21b *41/00, 27/06, 31/32*
U.S. Cl. 72—227 9 Claims

A multiple strand, multiple stand rolling mill for continuous cast billets and the like including a support housing arranged to receive four mill housings spaced equally apart in parallel positions to provide four parallel double roll stands. Two or more of the support housings are spaced apart to make up a tandem mill arrangement for four parallel pass lines.



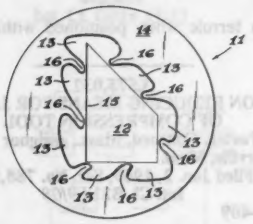
3,575,029
DEVICE FOR DRAW-FORMING METAL RODS
Hans Weber, Duisburg, and Joachim Mietzner, Angermund, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
Filed Dec. 16, 1968, Ser. No. 783,998
Claims priority, application Germany, Dec. 29, 1967, P 16 02 062.5
Int. Cl. B21b *1/42*
U.S. Cl. 72—240 7 Claims



A device for drawing a metal rod, particularly, a cast steel rod comprises one or more deforming rollers which are arranged to engage the rod on opposite sides thereof as it is moved thereby. The rollers are moved by a mechanism to provide for the desired drawing down from a wide diameter down to a relatively small diameter. The mechanism includes a pivotal support member which carries a deforming roll and which is moved by a first rotating crank into pressure force engagement with the rod being cast as the rod is moved thereby. The mechanism also includes an additional second crank mechanism for engagement with the support for shifting the support in a substantially longitudinal direction in respect to the rod being formed. In a first embodiment the second crank for controlling the longitudinal direction of movement of the support engages the support by means of a pushrod having a pin which is guided in a slot defined in the direction of the longitudinal axis of the support member and which is also guided by a sliding block. In another embodiment the engagement of the second crank with the

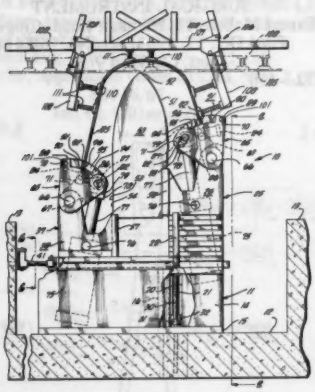
support is a direct engagement. The drive for the crank includes a gear which drives through an idler gear to the crank for moving the support member in a direction toward and away from the rod being cast. An alternate embodiment includes a direct gear drive from the first crank to a gear carrying the shaft for the second crank.

3,575,030
SLANTED WELD EXTRUSION PROCESS
Karl F. Braeuninger, Ferguson, Mo., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 1, 1967, Ser. No. 679,836
Int. Cl. B21c *25/04*
U.S. Cl. 72—269 **3 Claims**



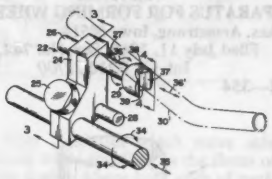
In forming a hollow metal shape from a billet using a porthole extrusion die, the metal of the billet flowing through the portholes is directed around bridges and the resulting streams are brought together and rejoined along a plane that extends transversely to the wall of the resulting shape at an angle of about 10° to 70° from a line extending normal to the face of the shape adjacent the resulting weld zone, thereby providing an extruded hollow shape that exhibits improved elongation and strength properties in and about the weld zone, such properties being substantially the properties of the metal apart from the weld zone. The described article is made using a porthole die in which the bridges separating the feederholes of the feederhole plate are disposed at the said angle of 10° to 70° from a plane extending normal to the face of the shape, formed in such a die, adjacent the weld zone.

3,575,031
STRETCH-FORMING MACHINE WITH STRESS-ISOLATED BASE
Landon R. Gray, Portuguese Bend, Calif., assignor to Sheridan-Gray, Inc., Huntington Park, Calif.
Filed July 25, 1968, Ser. No. 747,598
Int. Cl. B21d *11/02*
U.S. Cl. 72—302 **16 Claims**



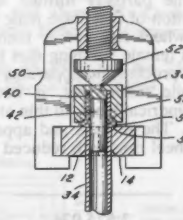
A machine for stretch forming of sheet-metal parts, such as leading-edge surfaces for an aircraft wing, over an upright forming die. Gripping jaws are pivotally supported by frames on opposite sides of the die to rotate about pivot axes substantially parallel to side surfaces of the die. The jaws and frames are adjustable in position with respect to each other to accommodate dies which are tapered or have unequal side surfaces. Hydraulic cylinders drive the jaws from a loading position where a metal sheet is guided into the jaws, into a stretch-forming position where the jaws are tangent to the die surfaces and the sheet extends from the die through a right-angle bend into the jaws. A single cylinder is used on each jaw to accomplish initial positioning as well as to apply stretch-forming force. The die is supported on the upright jaw-supporting frames, and reaction forces arising during stretch forming are isolated from a base which carries the frames.

3,575,032
TUBE BENDING TOOL
Emery J. Zahuranec, Solon; Zoltan Szohatzky, Mentor, and Harry G. Dodge, Painesville, Ohio, assignors to Crawford Fitting Company, Solon, Ohio
Filed Nov. 12, 1968, Ser. No. 775,022
Int. Cl. B21d *11/04*
U.S. Cl. 72—311 **9 Claims**



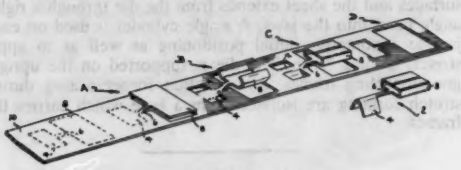
A universally adjustable tube abutment for a hand operated tube bending tool to accommodate tubes in which bends are to be placed in various planes.

3,575,033
TUBING BEADER
Howard F. Meyer, Jr., Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 14, 1969, Ser. No. 807,230
Int. Cl. B21d *41/02*
U.S. Cl. 72—317 **5 Claims**



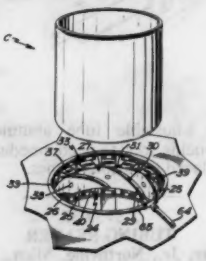
A die member contains an annular passage that surrounds the exterior of a tube end and a guide pin that extends into the passage in the tube beyond the location of a desired bead. The tube is clamped into a holder at the approximate location of the bead and a force is applied to the die member to move the member toward the holder. This movement deforms the tube wall outward between the die member and the holder, thus forming a bead on the tube at a point remote from the tube end.

3,575,034
METHOD OF FORMING
Linn Stephen Lightner, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 14, 1965, Ser. No. 495,892
Int. Cl. B21d *31/02*; B21c *37/02*; B21d *28/00*
U.S. Cl. 72—339 3 Claims



This invention relates to a method of forming a sheet metal article such as an electrical contact wherein the direction of bending of the article is the same as the direction of shear, whereby the stress areas of said article are maintained at the inner portion of the bends in the article, thereby minimizing the chance of subsequent fracture.

3,575,035
APPARATUS FOR FORMING WHEEL RIMS
Earl T. Nokes, Armstrong, Iowa 50514
Filed July 11, 1968, Ser. No. 744,216
Int. Cl. B21d *22/00*
U.S. Cl. 72—354 9 Claims



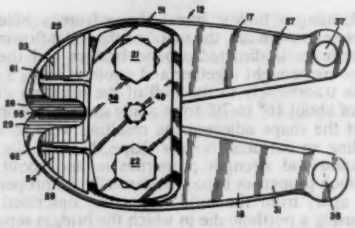
A process and apparatus for forming a drop center wheel rim wherein a substantially rectangular piece of metal is shaped into a cylindrical blank and the central portion thereof is engaged and progressively urged inwardly by pressure applying medium to form the drop center or well of the wheel rim. The partially formed wheel rim is then subjected to the action of first-stage male and female dies to further form the wheel rim and is then subjected to the action of male and female finishing dies to completely form the wheel rim. The process and apparatus permits wheel rims to be formed while minimizing, if not elimination, any tendency of the cylindrical blank to thin at areas known to be subjected to stress. The process and apparatus also permits the formation of wheel rims with reduced requirements as to space and time.

3,575,036
CRIMPING TOOL AND DIE ASSEMBLY
Joseph Willard Hoffman, Liverpool, and Henry William Demler, Sr., Lebanon, Pa., assignors to AMP, Incorporated, Harrisburg, Pa.
Filed Sept. 13, 1967, Ser. No. 667,461
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 9 Claims

A die assembly comprises opposed carrier members in which pairs of die members are pivotally mounted so that the pairs of die members are disposed opposite each other. Spring means maintain the pairs of die members in positions so that the crimping areas thereof are directed away from each other in a nonoperating position and the crimping areas are moved toward each other upon interengagement of the pairs of die members to define a crimping configuration to be

applied to a ferrule when positioned within the crimping areas.

3,575,037
DISTORTION REDUCING MEANS FOR JAW PORTION OF COMPRESSION TOOL
Thomas M. Porter, Concord, Mass., assignor to H. K. Porter, Inc., Somerville, Mass.
Filed Jan. 2, 1969, Ser. No. 788,583
Int. Cl. B21d *9/08*
U.S. Cl. 72—409 3 Claims



The cross straps of a heavy-duty compression tool are provided with extended nose portions that bear against both sides of both jaw members for a substantial distance forward of the strap pivots. A parallel walled slot is provided between the extended nose portions to receive the work. The function of the extended nose strap is to reduce if not eliminate out of plane distortion of the jaw members thereby not only improving the ability of the tool to perform its function, but at the same time reducing the handle load and the strain imposed on the various portions of the tool.

3,575,038
SURGICAL INSTRUMENT
Herbert Ernest Mallett, 11, Hainault Road, Chigwell, England
Filed Oct. 17, 1968, Ser. No. 768,414
Int. Cl. B21d *9/08*
U.S. Cl. 72—410 7 Claims

A pair of forceps for inserting a staple into the edges of an incision in a blood vessel, the forceps comprising two jaw

portions, a head at the tip of one jaw, a cage surrounding the head and adapted to receive and support a staple on the head, resilient means enabling the cage to move reciprocally relative to the head and an anvil at the tip of the other jaw portion adapted to depress the cage relative to the said one jaw portion, as the jaws are closed, and set the staple.

3,575,039

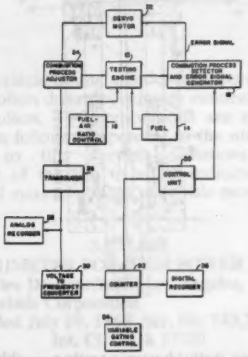
AUTOMATED TEST OF FUEL COMBUSTION QUALITY

William E. Beal, Pitman, N.J., assignor to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 295,733, Jan. 17, 1963, now abandoned, Continuation-in-part of application Ser. No. 160,051, Dec. 18, 1961, now Patent No. 3,238,765, Continuation of application Ser. No. 790,138, Jan. 9, 1969, now abandoned. This application July 31, 1969, Ser. No. 848,409

Int. Cl. G01n *33/22*

U.S. Cl. 73—35 8 Claims



A system for determining a combustion quality of a fuel, e.g., octane or cetane value, wherein the detonation intensity or time lag of a test fuel powering a standard test engine is compared to a reference value to generate an error signal. The compression ratio of the engine is adjusted in response to a function of the error signal to maintain a predetermined condition of detonation intensity or time lag, and the amount of adjustment of the compression ratio provides a representation of the combustion quality of the fuel. The system may also include means for controlling a process of blending the test fuel to a predetermined specification in response to a signal which is a function of the amount of adjustment of the compression ratio.

3,575,040

APPARATUS FOR TESTING A PIPELINE FOR LEAKS

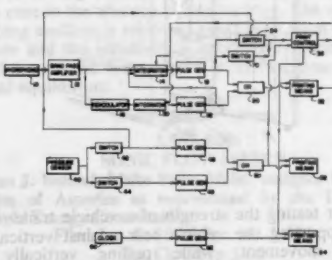
Hendrik Bosselaar, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 9, 1968, Ser. No. 752,108

Claims priority, application Great Britain, Nov. 2, 1967, 80316/67

Int. Cl. G01m *3/24*

U.S. Cl. 73—40.5 2 Claims



Apparatus for testing pipelines for leaks. The apparatus is passed through a pipeline by the flow of fluid. A hydrophone connected to the apparatus is in contact with the fluid and is sensitive to ultrasonic signals from the fluid arising from a leak. The ultrasonic signals appear on a recorder chart as a function of either the distance covered or a quantity related thereto. Pressure sensors are also attached to the apparatus, the signals of which can be for recording pressure indications as a function of either the distance covered or a quantity related thereto, and/or for actuating a switch device by which the recording equipment for ultrasonic signals can be partly or entirely switched off.

3,575,041

APPARATUS FOR TESTING CIGARETTES OR THE LIKE

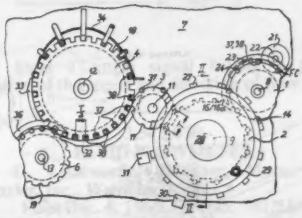
Uwe Heitman, Luneburg, Germany, assignor to Hauni-Werke Korber & Co. K. G., Hamburg, Germany

Filed Nov. 20, 1968, Ser. No. 777,326

Claims priority, application Germany, Dec. 7, 1967, P 16 32 216.0

Int. Cl. B07c *5/12*

U.S. Cl. 73—45.1 20 Claims



Two rows of filter cigarettes which move sideways are tested simultaneously while traveling in the flutes of a testing drum past a testing station where both ends of each cigarette receive testing fluid from a stationary source. The drum is provided with an annular flange between the two rows of flutes and with two rows of nipples which engage the outer ends of cigarettes during travel past the testing station to urge the inner ends of such cigarettes against the flange. Testing fluid is admitted by way of the nipples and through passages provided in the flange, and the passages of the flange are connected with an electronic or pneumatic testing unit during travel past the testing station. The testing unit controls an ejector which expels defective cigarettes from their flutes downstream of the testing station. One row of cigarettes is thereupon inverted end for end so that the cigarettes of the one row are deposited between the cigarettes of the other row.

3,575,042

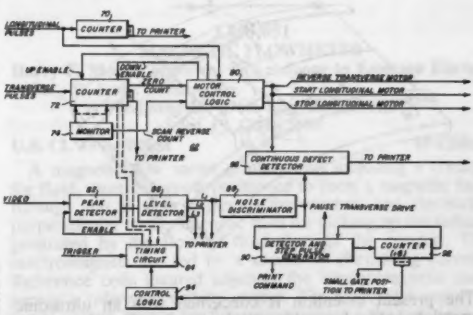
AUTOMATIC DIGITAL RECORDING WELD DEFECT DETECTOR

James F. Lovelace, and Dennis T. Cook, Niantic, Conn., assignors to General Dynamics Corporation, New York, N.Y.

Filed Aug. 28, 1968, Ser. No. 755,840

Int. Cl. G01n *24/04*

U.S. Cl. 73—67.8 9 Claims



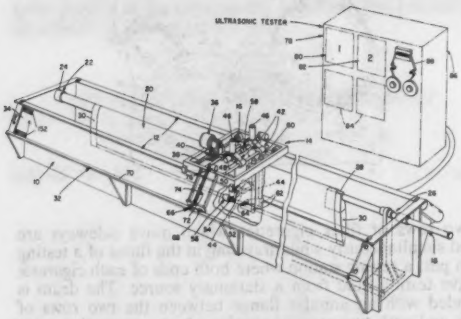
An automatic weld inspection system is described having an ultrasonic defect detector of the pulse reflection type. A

search unit is mounted in a mechanism which moves it in incremental steps in directions parallel and perpendicular to the weld. An electronic control system which is responsive to the detection of a defect signal stops the mechanism movement of the scanner and electronically scans the weld in a direction running depthwise through the weld. The electronic scanning system and the mechanical scanner provide digital readouts to a printer, so that the location of the defect and other characteristics thereof may be indicated.

3,575,043
ELONGATE ELEMENT ULTRASONIC INSPECTION SYSTEM

John W. Allen, Danbury, Conn., and Leon D. Furon, Woodland Hills, Calif., assignors to Air Products and Chemicals, Inc.

Continuation of application Ser. No. 561,435, June 29, 1966, now abandoned. This application Mar. 17, 1969, Ser. No. 808,012
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 **15 Claims**

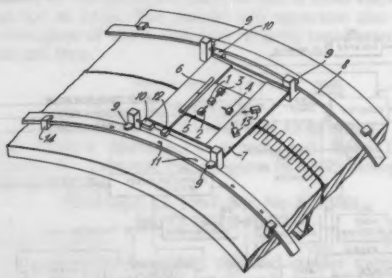


Apparatus is described which includes ultrasonic search wheels or the like for ultrasonically scanning a vertical elongated element. The search wheels operate in unison across the workpiece in response to a follower which in turn is mounted to a carriage. The follower is constructed to ride on the top surface of the vertical element. The search wheels are pivotally mounted in such a manner that the ultrasonic energy radiated into the element is always normal to the surface of the element.

3,575,044
ULTRASONIC INSPECTION SYSTEM FOR WELDS

Harold Gibbs, and Walter Jeffrey Lethbridge, Bath, Somerset, England, assignors to National Research Development Corporation, London, England

Filed Dec. 11, 1967, Ser. No. 689,546
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.9 **8 Claims**

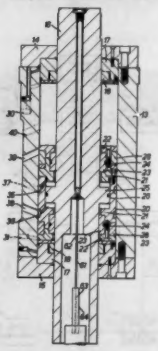


The present invention is concerned with an ultrasonic inspection system for welds and the like in which the weld is repeatedly scanned automatically by one or more acoustic transducers each transducer being linked to selected channels of a multi channel high-speed recorder whereby a record showing the position of any flaws together with an indication of their size is produced.

3,575,045
A TESTING MACHINE FOR APPLYING STATIC AND DYNAMIC FORCES

Richard Northam Knights, Gloucester, England, assignor to Amsler (Great Britian) Limited, Leamington Spa, England

Filed July 22, 1968, Ser. No. 746,479
Claims priority, application Great Britain, Aug. 1, 1967, 35,186/67
Int. Cl. G01n *3/32, 3/10*
U.S. Cl. 73—92 **4 Claims**

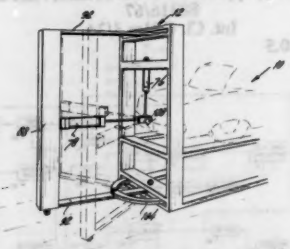


A dual-purpose static/dynamic testing machine comprising a base supporting an outer hydraulic double-ended ram cylinder containing a movable piston which is hollow and itself forms the cylinder for a second movable piston connected to a piston rod passing through the upper ends of both cylinders and having means for attachment to a specimen at its upper end. Valve means admit hydraulic pressure selectively to opposite ends of the outer cylinder to apply a static load, and further valve means apply oscillating hydraulic pressure to opposite ends of the inner cylinder for dynamic testing.

3,575,046
METHOD FOR TESTING A VEHICLE TRAILER HITCH

Henry S. Shattles, and James F. George, Phoenix, Ariz., assignors to Arcoa International, Inc., Phoenix, Ariz.

Filed June 2, 1969, Ser. No. 829,504
Int. Cl. G01n *3/08, 3/24, 3/28*
U.S. Cl. 73—95 **9 Claims**

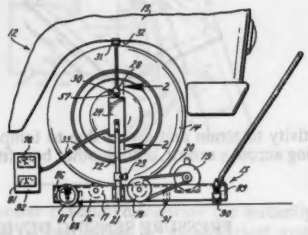


Method for testing the strength of a vehicle trailer hitch, including supporting the vehicle rear against vertical and longitudinal movement, while pulling vertically and longitudinally with respect to the hitch. The pulling longitudinally is radially varied, so as to measure the effects of trailer loads from variant sectors.

3,575,047
RADIAL TIRE FORCE DETERMINING APPARATUS

Lee Hunter, St. Louis Co., and David A. Senften, Florissant, Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Mar. 27, 1969, Ser. No. 811,161
Int. Cl. G01m 17/02
U.S. Cl. 73—146 10 Claims

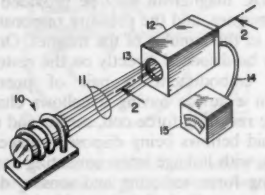


A tire of a vehicle having a finder is supported on a pair of tire cradling rollers driven by a motor connected by a belt to one of the rollers. Two sensor units are connected to a vehicle motion follower responsive to the movement of the finder due to tire strength variations around the circumference of the tire to effect indications of vehicle movement and maximum range of vehicle movement.

3,575,048
CALORIMETER FOR HIGH POWER LASERS

Leonard Charles De Benedictis, Los Angeles, Calif., assignor to Union Carbide Corporation

Filed July 10, 1968, Ser. No. 743,781
Int. Cl. G01k 17/00
U.S. Cl. 73—190 8 Claims



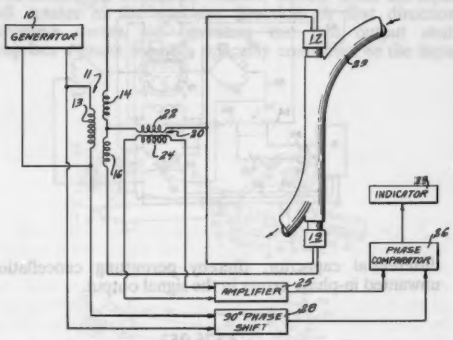
A calorimeter of the ballistic thermopile type particularly useful for measuring energy in high power pulsed laser beams utilizes a glass filter as the absorbing medium. Since the thermal conductivity of glass is ordinarily poor, a highly thermally conductive material such as a copper disc is bonded directly to the rear surface of the glass. By providing this copper backing to the glass, the absorbing medium comes to thermal equilibrium considerably faster than would be the case in the absence of any backing. The volume of the absorbing medium is relatively small in relation to the usable aperture and the sensitivity is accordingly greatly increased in addition to the feature of a shortened time to arrive at thermal equilibrium.

3,575,049
SONIC FLOW METER

Thomas J. Boland, Idaho Falls, Idaho, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 8, 1970, Ser. No. 1,482
Int. Cl. G01p 5/00
U.S. Cl. 73—194 5 Claims

A device for measuring the velocity and direction of flow of a fluid uses a pressure wave signal which is transmitted both upstream and downstream. The resulting signals are

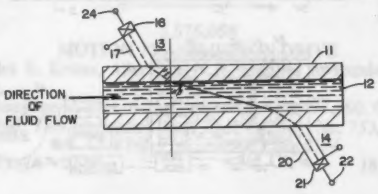


mixed to form a single signal having a phase angle representative of the speed and direction of flow.

3,575,050
FLUID FLOWMETER

Lawrence C. Lynnworth, Waltham, Mass., assignor to Panametrics, Inc., Waltham, Mass.

Filed Dec. 4, 1968, Ser. No. 781,231
Int. Cl. G01f 1/00
U.S. Cl. 73—194 18 Claims



An ultrasonic flowmeter to measure fluid velocity within a pipe. The device employs, in one embodiment a pair of shear wave transducers positioned on the pipe to propagate shear waves into oblique incidence with the pipe wall-fluid interface. Longitudinal waves are thereby produced by mode conversion and propagated diagonally upstream and downstream in the fluid. The difference in transit time between upstream and downstream components indicates flow velocity. Alternatively, the Doppler shift of the longitudinal wave, after backscattering from a particle or eddy in motion is indicative of fluid velocity.

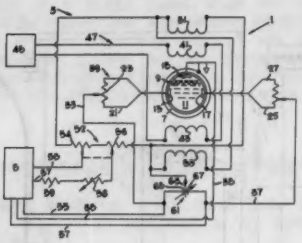
3,575,051
MAGNETIC FLOWMETER

Harry F. Moore, Hilltown, Pa., assignor to Emerson Electric Co.,, St. Louis County, Mo.

Filed May 29, 1968, Ser. No. 733,128
Int. Cl. G01p 5/08
U.S. Cl. 73—194EM 10 Claims

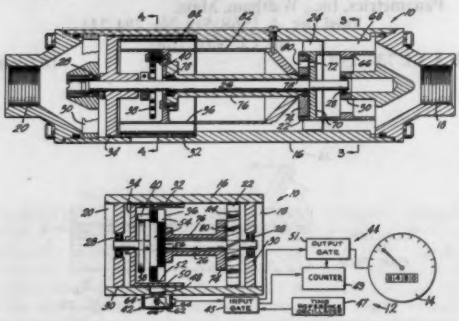
A magnetic flow meter primary unit including a conduit for fluid, electromagnets positioned to form a magnetic field through and at right angles to the conduit, and electrodes perpendicular to the magnetic field for picking up the voltage generated by the flow of fluid through the conduit. The electromagnets are fed by a source of alternating current. Reference coils located adjacent the electromagnetic coils supply a reference voltage output. The electrodes supply a signal output. Within the flow meter primary, the two sides of the signal output are electrically connected to the fixed

plates of a variable differential capacitor, and the reference output is electrically connected to the movable plate of the



differential capacitor, thereby permitting cancellation of unwanted in-phase errors in the signal output.

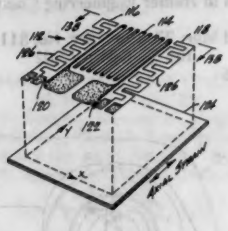
3,575,052
MASS FLOWMETER
Paul E. Lenker, Davenport, Iowa, assignor to The Bendix Corporation
Filed Mar. 17, 1969, Ser. No. 807,699
Int. Cl. G01f 1/12
U.S. Cl. 73—231 **12 Claims**



A fluid flowmeter capable of providing a true-mass flow rate readout in which a fluid powered drive turbine and a reaction turbine are arranged in the flowing fluid so that the reaction turbine is driven by the drive turbine in a manner such that the reaction turbine lags the drive turbine by a lag angle which is proportional in magnitude to the mass flow rate of the stream. A variable bypass opening is provided in the drive turbine which is closed at zero flow rate and is automatically progressively opened as the lag angle is increased to thereby enable accurate operation of the flowmeter over a significant flow range. An optical device is provided for continuously reading out the lag angle, by providing a time measurement, to provide a continuously recurring indication of flow rate.

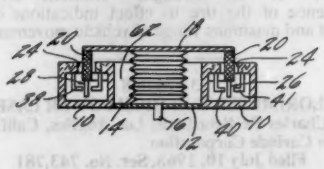
3,575,053
CRYOGENIC LINEAR TEMPERATURE SENSOR
John C. Telinde, Westminster, Calif., assignor to McDonnell Douglas Corporation
Filed July 11, 1968, Ser. No. 744,106
Int. Cl. G01k 7/18; H01c 3/00
U.S. Cl. 73—362 **9 Claims**

Cryogenic temperature sensor having a linear resistance response down to almost absolute zero. Sensor includes a manganin element and a nickel element connected in a series combination wherein there is of the order of five times as much manganin as nickel (in resistance). The manganin-nickel temperature sensor may be used in a bridge circuit to provide linear output indications of the temperatures sensed by the sensor. Different sensor configurations having specific features and advantages were developed to reduce sensor



sensitivity to strain and errors due to temperature gradients existing across a sensor, among other benefits.

3,575,054
PRESSURE SENSING DEVICE
Edward M. Glista, East Longmeadow, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 12, 1969, Ser. No. 806,586
Int. Cl. G01l 9/14
U.S. Cl. 73—398R **5 Claims**

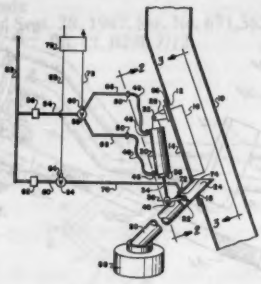


A bellows chamber has directly connected thereto a restoring force coil and Hall field plate position sensing devices which utilize the same DC magnetism as the restoring force coil. DC magnetism may be provided by an annular permanent magnet, and the pressure responsive bellows may be disposed in the annulus of the magnet. One or more Hall devices may be disposed directly on the restoring force coil. In another embodiment, a pair of pressures may be monitored in a device having a bellows chamber for each pressure, the restoring force coil, sensor and magnet relating to one of said bellows being disposed adjacent the other of said bellows, with linkage interconnecting each bellows with corresponding force restoring and sensing devices, thereby providing for mechanical advantage between the force applied by the coil and the force applied to the bellows, so as to reduce the magnetic field requirements and thus the physical size of the device, for a given pressure. In another embodiment, the magnet, restoring coil and sensors may be disposed at the moveable end of a bellows chamber, opposite the pressure inlet. In another embodiment of the invention, a diaphragm may be utilized to define a chamber having a wall displaceable by pressure differentials thereacross, instead of a bellows chamber.

3,575,055
APPARATUS FOR AUTOMATICALLY SAMPLING SOLIDS
Audis H. Thornton, Jr., Lake Charles, La., assignor to Continental Carbon Company, Houston, Tex.
Filed Oct. 16, 1969, Ser. No. 866,906
Int. Cl. G01n 1/20
U.S. Cl. 73—422 **10 Claims**

A sampling apparatus for automatically sampling solids at regulated time intervals from a conduit carrying said solids comprising a base member affixed over an opening in the conduit and having a sampling tube extending through the member and the conduit and into the path of guide vanes mounted on said base member. The sampling tube has a butterfly valve to form a sampling chamber in the upper end

and the lower end communicates into a sample accumulator. The apparatus has a pneumatic system with a line to purge the sample chamber before the sampling operation and lines



to activate a power cylinder to operate the butterfly valve, and this system is controlled by an electrical system for timing and sequential activation of the components to obtain and transfer samples to the accumulator.

3,575,056

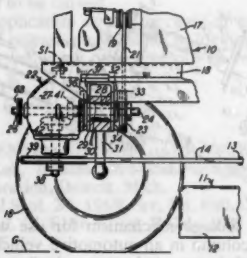
TRACTOR WITH ATTACHMENTS

William J. Schlapman, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.

Continuation-in-part of application Ser. No. 625,112, Mar. 22, 1967, now abandoned. This application Dec. 13, 1968, Ser. No. 783,617

Int. Cl. F16h *37/06*

U.S. Cl. 74—15.2 **8 Claims**



A garden-type of tractor with attachments, such as a snow thrower, a rotary broom, a rotary lawn mower, and the like. A gear box is swingably mounted on the tractor for selective power transmission between the tractor prime mover and the selected one of the mentioned attachments. An input shaft is in the gear box, and it is constantly rotated by the prime mover in only one direction. However, an output shaft is in the gear box and is in driving relation to the input shaft and is rotated in accordance with the direction of swinging adjustment of the gear box on the tractor. Thus, the attachments are operatively connected to the output shaft to be accordingly driven or rotated in the desired directions. Further, connection means extend between the tractor frame and the gear box, in one embodiment of the invention, for holding the gear box in its selected position. In another embodiment of the invention, connection means extend between the tractor axle, which is pivotal, and the gear box, for securing the gear box with the pivotal axle and have it pivot or oscillate along with the pivoting of the axle.

3,575,057

DRIVE MECHANISM

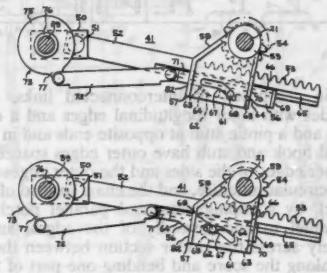
Victor J. Kurowski, Louisville, Ky., assignor to General Electric Company

Filed Dec. 20, 1968, Ser. No. 785,514

Int. Cl. F16h *19/04*; **D06f** *29/00*

U.S. Cl. 74—30 **7 Claims**

A drive mechanism for an automatic clothes washer is provided having a single reversibly rotatable input shaft and first and second concentric output shafts. The first output shaft connects with an agitator for low speed oscillation thereof when the input shaft rotates in one direction. The second output shaft connects to a washing basket for high speed centrifugal extraction rotation thereof when the input shaft rotates in the opposite direction. A first direction responsive means for operating the first output shaft comprises a crank member operably connected to the input



shaft for rotation thereby, a rack operably connected to the crank member for reciprocation thereby, a pinion operably connected to the first output shaft, and means for engaging and disengaging the rack from the pinion. A second direction responsive means for operating the second output shaft comprises a first gear connected through a direction responsive spring clutch to the input shaft, and a second gear driven from the first gear and operably connected to the second output shaft.

3,575,058

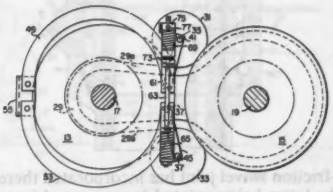
MOTION TRANSMISSION DRIVE

Charles E. Kraus, Allendale, N.J., assignor to Excelermatic, Inc.

Continuation-in-part of application Ser. No. 499,560, Oct. 21, 1965. This application Aug. 20, 1968, Ser. No. 753,941

Int. Cl. F16h *7/12*, *55/56*; **F16g** *1/24*

U.S. Cl. 74—227 **18 Claims**



A power transmission device having a pair of pulleys connected by a traction transmitting member such as a chain, such chain being of sufficient length to provide intentionally a certain amount of sag between the pulleys with control of both slack and tight side chain pull and control of maximum ratio of tight to slack pull. Continuous tension on both tight and slack sides of the member is applied to provide for adequate wrap of the member around the pulley. The pulleys may be of variable pitch type to provide for adjustable speed operation under suitable control.

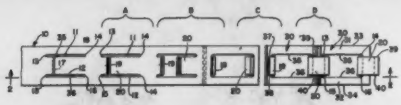
The chain has longitudinally extending contact surfaces engaging the pulley flanges which lie along the centerline of the chain, are essentially flat, match the pulley flange surfaces, and are positioned between the joints of the chain links.

3,575,059

A CHAIN FORMED OF INTERCONNECTED FLAT LINKS

Joseph T. Chester, Fulton, Ill., assignor to Richard A. Kummerer, Fulton and Alfred Den Beston, Fulton, Ill., a fractional part interest to each

Filed Mar. 11, 1968, Ser. No. 711,943
Int. Cl. F16g 13/02
U.S. Cl. 74—249 4 Claims



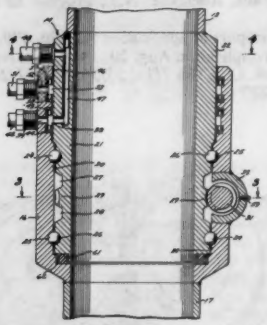
A chain composed of interconnected links, each link having sides with inner longitudinal edges and a cylindrical hook end and a pintle stub at opposite ends and in which the cylindrical hook and stub have outer edges spacedly inward of the inner edges of the sides and the outer edges are joined by a semicircular juncture, and the chain formed of flat metal strip stock by stamping elongated parallel notches in the stock parallel to and inwardly of the edges, and scoring transversely across the center section between the notches; severing along the score and bending one part of the center section to form a pintle end of a link and bending the other part of the center section arcuately to form a hook end of the link that journals on the pintle end of an adjacent link.

3,575,060

POWER-OPERATED AND MANUALLY-OPERATED SWIVEL JOINT

Leondras A. Warren, Whittier, Calif., assignor to Stang Hydronics Inc., Orange, Calif.

Original application Aug. 28, 1968, Ser. No. 755,919, now abandoned. Divided and this application Apr. 9, 1970, Ser. No. 26,880
Int. Cl. F16h 1/16
U.S. Cl. 74—425 11 Claims



A low-friction swivel joint has incorporated therein a worm wheel, the latter being rotated by a worm driven by a fluid motor. A second and corresponding swivel joint is also provided, being driven by fluid which is passed through the first-mentioned joint in order that there will be not twisting of pipes or conduits. The passage of fluid through the first-mentioned joint is effected by transfer rings and associated grooves and passages.

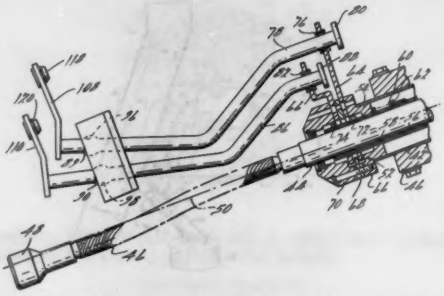
3,575,061

TORSION ROD SHIFT MECHANISM FOR TRANSMISSION

Benjamin T. Howes, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 24, 1969, Ser. No. 879,466
Int. Cl. G05g 9/02
U.S. Cl. 74—473SW 6 Claims

A shift linkage mechanism for use with a multiple ratio power transmission mechanism in an automotive vehicle driveline comprising a torsion rod mounted for universal movement on a fixed part of the vehicle body, a personally operable gearshift lever and a linkage arrangement



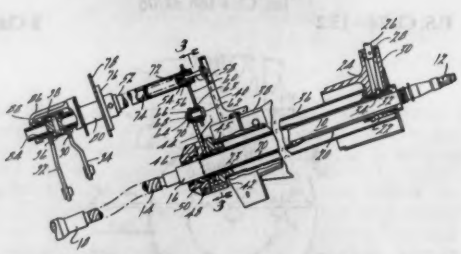
connecting one end of the gearshift lever to one end of the torsion rod, the other end of said torsion rod being connected to transmission ratio-controlling elements.

3,575,062

TRANSMISSION SHIFT CONTROL LINKAGE

Ernest W. Kitzner, Allen Park, and Alex Rhodes, Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 8, 1970, Ser. No. 1,474
Int. Cl. G05g 9/16
U.S. Cl. 74—484 8 Claims



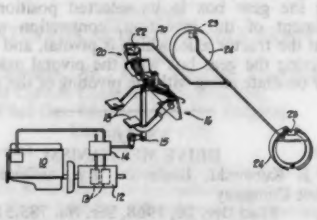
A gearshift linkage mechanism for use with a so-called mini-steering column in an automotive vehicle comprising a shift tube which is mounted concentrically with respect to a steering column of abbreviated length, a gearshift selector shaft mounted in spaced, parallel disposition with respect to the steering column and an articulated connection between the shift tube and the selector shaft for translating motion of one to the other during transmission ratio changes.

3,575,063

COWL-MOUNTED PEDAL ARRANGEMENT

Harley A. Harrom, Excelsior, Minn., assignor to White Farm Equipment Company

Filed Feb. 5, 1969, Ser. No. 796,763
Int. Cl. G05g 1/14
U.S. Cl. 74—512 10 Claims

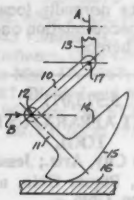


A foot-operated pedal assembly with combined mounting incorporating a master cylinder which attaches as a unit to the cowl of a vehicle, especially a lift truck.

3,575,064
OVER-CENTER MECHANISM

Harry T. Stevinson, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Sept. 28, 1967, Ser. No. 671,363
Int. Cl. B25b 7/12
U.S. Cl. 74—520 11 Claims



An overcenter mechanism in which the work required to move the mechanism overcenter from the respective sides can be made asymmetrical. For example, while the force needed to move the mechanism in a forward direction overcenter remains substantial, that required to return it to the center position can be made zero or some other chosen value different from, and preferably smaller than, the forward force.

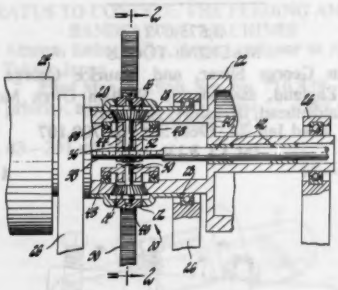
This effect is achieved by building up a specially shaped surface on one or more of the link members of the mechanism and causing this surface to roll on a flat surface as the mechanism moves from side to side across the center position. Alternatively, the flat surface can be built up with a ramp so as itself to be curved.

One useful application of the mechanism is to avoid the need for special release mechanisms in locking wrenches of the overcenter type which otherwise can be very difficult to open.

3,575,065
DIFFERENTIAL GEARING ARRANGEMENT

Nathaniel B. Kell, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1969, Ser. No. 860,558
Int. Cl. F16h 37/06; B62d 11/00
U.S. Cl. 74—665 2 Claims

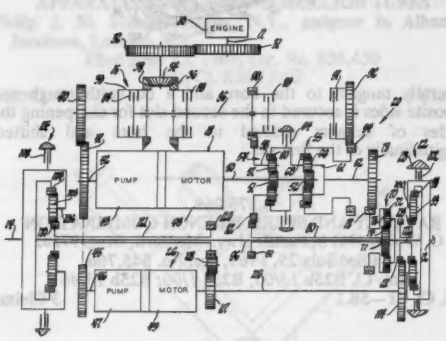


This specification describes a differential-gearing unit having two input members and two output members that are interconnected by a spur gear and bevel gear arrangement. One of the inputs engages a ring gear that drives the carrier of the bevel gearing while the other input engages a pair of spur gears that drive the pinions of the bevel gearing. Input motion of the one input results in equal unidirectional motion of the two outputs while input motion of the other input results in equal but opposite motion of the two outputs. Simultaneous motion of both inputs results in a phase change between the two outputs.

3,575,066
TRANSMISSION

William G. Livezey; James J. Mooney, Jr., and William V. Phillips, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 23, 1969, Ser. No. 860,247
Int. Cl. F16h 37/06, 47/04
U.S. Cl. 74—720.5 4 Claims

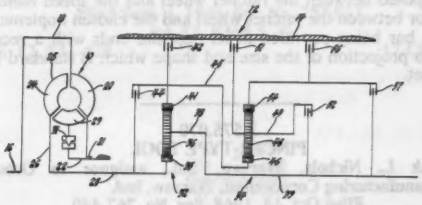


A transmission having a hydrostatic propulsion drive unit combined with planetary gearing to provide in both forward and reverse a full hydrostatic drive in a low-speed range and two different hydromechanical drives in successively higher speed ranges with synchronous drive-establishing device shifting, the transmission with dual output also having a separate hydrostatic steer drive unit combined with the gearing to provide steering. The invention herein described was made in the course of work under a contract or subcontract thereunder with the Department of the Army.

3,575,067
TRANSMISSION

Stanley W. Herman, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1969, Ser. No. 866,915
Int. Cl. F16h 57/10
U.S. Cl. 74—759 3 Claims



A vehicular transmission having two planetary gear sets, three brakes and three clutches combined to provide three forward speed range drives and one reverse speed range drive with an extremely high-speed reduction ratio in the lowest forward speed range drive.

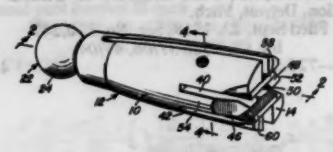
3,575,068
SCISSORS SHARPENER

Alton B. Stafford, Vanceburg, Ky., assignor to Herbert M. Bertram, Jr., fractional part interest to each

Filed Apr. 22, 1969, Ser. No. 818,368
Int. Cl. B21k 11/06
U.S. Cl. 76—82.2 8 Claims

An elongated body having a free end and a central bore formed therein opening outwardly of the free end of the body. The body includes a first longitudinal slot extending transversely therethrough, disposed generally on a diameter

of the bore and opening outwardly of the free end of the body. The body further includes a second longitudinal slot extending transversely through the body with its medial plane



generally tangent to the bore and a bar with roughened opposite sides is secured in the second slot for sharpening the blades of scissors rotated in the bore and shifted longitudinally of the first slot.

3,575,069
RATCHET AND SPEED WRENCH COMBINATION

Kit C. White, 3761 S. Pacific Hwy., Medford, Oreg. 97501

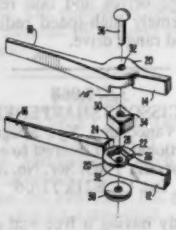
Filed July 29, 1969, Ser. No. 845,766
Int. Cl. B25b *13/00*; B25g *1/00*; B25b *13/46*
U.S. Cl. 81—58.1 3 Claims

A ratchet and speed wrench is provided together with a set of implements comprising sockets and/or screwdriver bits and an optionally usable, upstanding speed handle. A reversible, rotatively mounted, ratchet wheel is completely contained in a ratchet handle or arm, except for a noncircular, lower projection onto which implements may be selectively fitted. The portion of the ratchet wheel within the arm has formed in its upper surface a recess (standard for the set) which is complementary in size, shape and depth to the wheel projection. The upstanding speed handle is adapted to be detachably fitted into the recess of the wheel in axial alignment with the wheel for directly turning the ratchet wheel relative to the ratchet handle. Extension bars may be interposed between the ratchet wheel and the speed handle, and/or between the ratchet wheel and the chosen implement, each bar being provided at its opposite ends with a recess and a projection of the size and shape which is standard for the set.

3,575,070
PINCER-TYPE TOOL

Frank L. Nichols, Warsaw, Ind., assignor to Osborn Manufacturing Corporation, Warsaw, Ind.

Filed Oct. 14, 1968, Ser. No. 767,440
Int. Cl. B25b *7/08*
U.S. Cl. 81—416 7 Claims

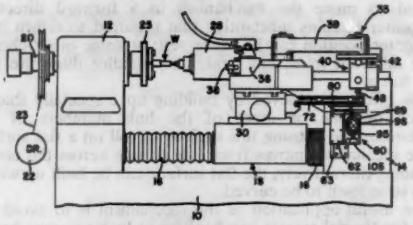


Disclosed is a pincer-type tool having elongated members pivotally mounted in overlying relation one to the other intermediate their ends with the jaw and handle portion of each member lying on respective opposite sides of the other member. The overlying portions of the members have recesses facing one another and a block of elastomeric material is disposed within the recesses with the members being pivotally secured one to the other by a rivet extending through the overlying portions and the elastomeric element. The recesses and element are complementarily polygonally shaped such that the elastomeric block biases the members into a predetermined position relative to one another. The recesses are arranged to normally locate the jaws of the members in butting or spaced relation one to the other in the respective embodiments hereof.

3,575,071
TEMPLATE SUPPORT APPARATUS FOR A MACHINE TOOL

Raymond J. Miller, Sun City, Ariz.; Jesse W. Elliott, Dayton, and Ralph R. Nevin, Piqua, Ohio, assignors to H & H Industries, Inc., Dayton, Ohio

Filed June 30, 1969, Ser. No. 837,725
Int. Cl. B23b *3/28*; B23c *1/18*
U.S. Cl. 82—14 10 Claims

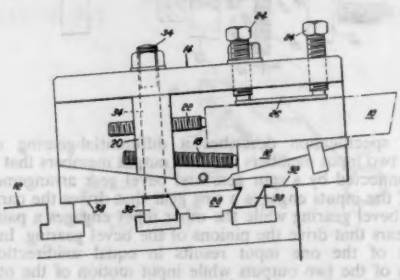


A precision turning machine is provided with an automatic hydraulic tracer control unit including a stylus adapted to engage a template. A carriage supports the template and is shiftable horizontally on an angle relative to the turning axis and in incremental steps in response to indexing of a wheel having a plurality of individually adjustable stop screws. The carriage and template are shiftable in precise increments between successive passes of the cutting tool to produce automatic successive roughing and finishing cutting operations according to the contour of the template.

3,575,072
MACHINE TOOLS

Derek Alan George Silver, and Maurice George Small, Slough, England, assignors to William Owen McKenzie Jones, Maidenhead, Berkshire, England

Filed Jan. 24, 1968, Ser. No. 700,107
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 4 Claims



A male dovetail member mountable at one or more tool operating stations of a multispindle lathe including means for

accurately locating, aligning and fixing the same at predetermined positions in relation to fixed parameters of the lathe; the dovetail member having a pair of uninterrupted reference and support surfaces each of which serves to selectively fix removable preset tools and tool holders in predetermined locations with respect to established reference parameters of the lathe.

3,575,073

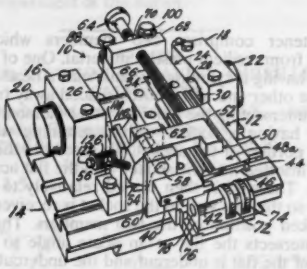
TOOL AND TOOL HOLDER

Robert C. Zeller, 643 Clinton St., and Warren W. Weible, 635 Holgate Ave., Defiance, Ohio 43512

Original application Mar. 17, 1967, Ser. No. 623,938, now Patent No. 3,503,287. Divided and this application Feb. 10, 1969, Ser. No. 817,210

Int. Cl. B23b *29/00*

U.S. Cl. 82—36 8 Claims



The invention is directed to a shave tool and a shave tool holder for cutting and forming machines, e.g., screw machines. The tool has a transverse cross section which is shaped, in part, the same as the piece to be machined so that the tool can be sharpened merely by grinding an end portion thereof. Also, all but a small portion of the tool can be utilized. The tool holder has adjustments for accurately positioning the tool with respect to a workpiece, with all of the adjustments being readily accessible. The tool holder has a contoured surface supporting the tool, with the mating surfaces of the holder and tool positioning the more critical areas of the tool precisely with respect to the workpiece.

3,575,074

APPARATUS TO CONTROL THE FEEDING AMOUNT IN BANDSAWING MACHINES

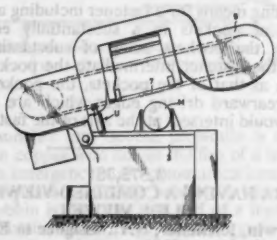
Tsuneo Aizawa, Isehara-Cho, Japan, assignor to Amada Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1968, Ser. No. 710,839

Claims priority, application Japan, June 12, 1967, 42/37241

Int. Cl. B26d *1/46*

U.S. Cl. 83—201.06 6 Claims



Apparatus to control the feeding amount in hydraulically controlled band sawing machines having a pivotable frame which supports the bandsaw, and a hydraulic cylinder for lifting and lowering the frame with respect to the material to be cut, comprising a hydraulic pressure control means for the cylinder, valve means (preferably with a knife-edge shaped outlet) for controlling the quantity of hydraulic fluid reaching the cylinder, and at least one hydraulic connection, namely between the outlet of the control means and the inlet of the valve means.

3,575,075

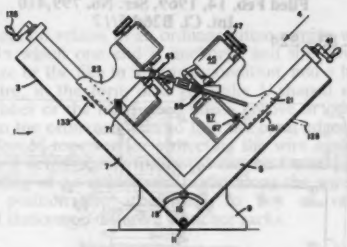
APPARATUS FOR CUTTING MULLION TUBES

Philip J. M. Fisher, Albany, N.Y., assignor to Alban I. Jacobson, Latham, N.Y.

Filed June 23, 1969, Ser. No. 835,430

Int. Cl. B26d *3/02*

U.S. Cl. 83—409 4 Claims



Discloses an apparatus for mitering the ends of mullion tubes for diamond-shaped mullion devices and, by such mitering, cutting inclusively the mullion tubes to their required lengths.

This invention relates to an apparatus for mitering the ends of mullion tubes for diamond-shaped mullion devices and, by such mitering, inclusively cutting the mullion tubes to their required lengths. Saw means and work-guide means are mounted on adjustable carriage means. The carriage means has an access aperture to permit the mullion tubes to be fed longitudinally to the work-guide means.

3,575,076

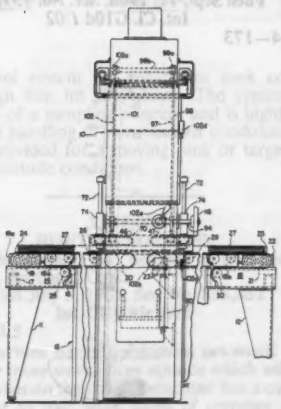
HOLD-DOWN APPARATUS FOR MATERIAL-CUTTING MACHINE

Herman J. Baldwin, and Phillip F. Stapf, Jr., Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sept. 3, 1968, Ser. No. 757,011

Int. Cl. B26d *5/20*

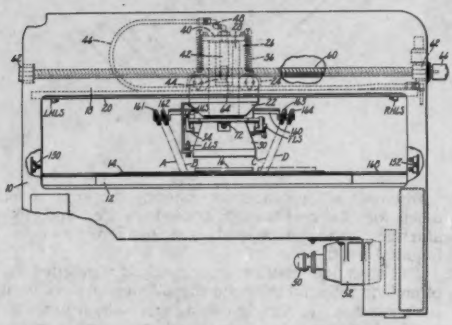
U.S. Cl. 83—422 17 Claims



A pair of endless bands is disposed on opposite sides of a transversely moving cutting blade to exert a predetermined

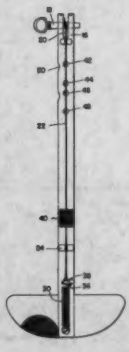
downward force on material, which is advanced longitudinally relative to the cutting blade. Each of the endless bands is passed around a pair of rollers, which are rotatably mounted in a housing. The housing is rockably supported to accommodate uneven surfaces of the material while still maintaining contact with the material through a portion of the band so as to exert the predetermined downward force on the material. Each of the housings has means therein to produce a bow in the roller adjacent its central portion whereby the band will track properly.

3,575,077
CONTROLS FOR TRAVELING HEAD-CUTTING PRESSES
Donald F. Herdeg, Beverly, and William B. Longval, Danvers, Mass., assignors to USM Corporation, Flemington, N.J.
Filed Feb. 14, 1969, Ser. No. 799,410
Int. Cl. B26d *5/12*
U.S. Cl. 83—524 **7 Claims**



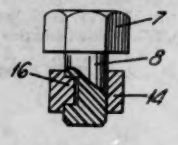
A traveling head cutting press is provided with light-responsive control means operative in accordance with the movements of the operator, without necessitating diversion of the operator's attention from work manipulation, for initiating platen movement of translation, either in initiating cutting strokes in response to withdrawal of the operator's hands from the danger zone or in causing traverse movement with the head in following the die placement area along the work. The control means is operative to terminate the platen movement automatically.

3,575,078
MUSICAL STRING INSTRUMENT
Robert N. Currier, 9 Second St., North Providence, R.I.
Filed Sept. 11, 1968, Ser. No. 759,009
Int. Cl. G10d *1/02*
U.S. Cl. 84—173 **3 Claims**



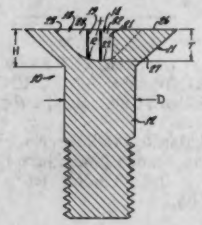
An elementary bowed string instrument having a string tensioned by an extendable spring anchored at one end to enable the string to be tuned visually by a marker cooperating with a pointer carried by the string.

3,575,079
QUICK RELEASE FASTENER
Howard John Leonard Smith, Farnham, Surrey, England, assignor to Dzus Fastener Co., Inc., West Islip, N.Y.
Filed June 26, 1969, Ser. No. 836,914
Claims priority, application Great Britain, June 28, 1968, 31060/68
Int. Cl. F16b *19/00*
U.S. Cl. 85—5 **3 Claims**



A fastener comprises two members which are both moulded from resilient plastics material. One of the members is a stud having a cylindrical shank with a head at one end, a flat at the other end and a notch spaced away from the other end and intersecting the flat. The other member is a retaining member having a socket with a retaining web extending across a portion of the socket. To assemble the fastener the shank is inserted into the socket with the flat accommodating the web. The stud is then turned relatively to the retaining member so that the web in the socket is received in the notch in a locked position of the two members. The base of the notch intersects the flat at an acute angle so that an edge portion of the flat is undercut and the undercut edge portion is deformed by the web as the stud is turned until a dead center position is reached whereafter the stud snaps into the locked position. The stud may be formed as a bolt and the retaining member as a nut.

3,575,080
FASTENER WRENCHING MEANS
Patrick M. Hannay, 1116 Akron St., San Diego, Calif. 92106
Continuation-in-part of application Ser. No. 710,904, Mar. 6, 1968, now abandoned. This application Dec. 2, 1968, Ser. No. 786,890
Int. Cl. B25d *15/00*; **F16b** *23/00, 35/00*
U.S. Cl. 85—45 **10 Claims**

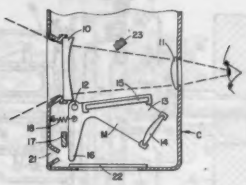


A wrenching means for a fastener including a recess having a plurality of pockets in a substantially equally spaced relationship, the pockets being of substantially the same width, and the fastener intermediate the pockets having the same width as that of the pockets, the pockets having forward and rearward driving edges which are planar and, if extended, would intersect at the axis of the fastener.

3,575,081
A CAMERA HAVING A COMBINED VIEWFINDER AND SLIDE VIEWER
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 24, 1968, Ser. No. 700,057
Int. Cl. G03b *13/02*
U.S. Cl. 88—1.5 **8 Claims**

A device is provided in a camera wherein the eyepiece of the viewfinder can be utilized in a slide viewer for viewing

slide transparency units when inserted in the camera. The transparency is positioned off the axis of the viewfinder and a mirror is moved into the field of the eyepiece in response to insertion of a slide to change the device from a viewfinder to

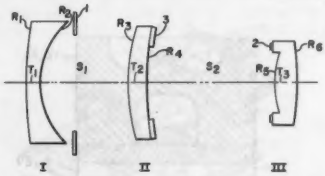


a slide viewer. Because it may be convenient to locate the transparency too close to the eyepiece for normal power of a viewfinder eyepiece, an auxiliary lens is moved into the system with movement of the mirror.

3,575,082
ALBADA VIEWFINDER HAVING THREE LENS COMPONENTS

Gilbert William McClune, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 24, 1968, Ser. No. 739,290
Int. Cl. G03b *13/08*
U.S. Cl. 88—1.5 **2 Claims**

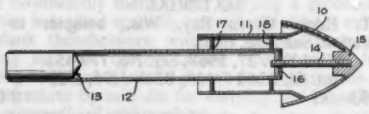


An Albada viewfinder comprising a negative aspheric objective and a positive eyepiece between which is located a positive meniscus element having on its rear surface a mirror for forming a virtual image of a reticle mark.

3,575,083
ANTENNA WIRE LAUNCHER AND BOBBIN PROJECTILE

John A. Hudick, E. Palo Alto, and Robert A. Rach, Los Altos, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Dec. 9, 1968, Ser. No. 782,219
Int. Cl. F41f *3/04;* **F42b** *15/06*
U.S. Cl. 89—1 **13 Claims**

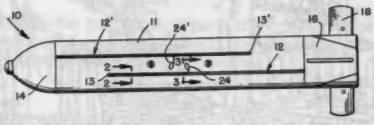


A small launcher and bobbin projectile is disclosed for draping a thin copper wire across the top of a tree for use as an antenna in emergency radio communications. The bobbin projectile comprises a suitable bobbin of wire with a nose cone. The bobbin is fitted on one end of a metal tube. The other end contains a cartridge of solid grain rocket fuel having a conventional bullet primer as an igniter. An inertia-type firing pin in the launcher is propelled by a hammer into the primer against the projectile mass. The rocket propelled projectile is spin stabilized by means of canted exhaust ports. The loose end of the wire is anchored on the ground, and the wire is payed out as the projectile ascends.

3,575,084
ARMING WIRE ASSEMBLY

Dennis E. Glendenning, Fort Walton Beach, Fla.; Charlie R. Rodgers, and Roy W. Martin, Ridgecrest, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Dec. 11, 1968, Ser. No. 782,930
Int. Cl. F41f *5/02*
U.S. Cl. 89—1.5 **3 Claims**

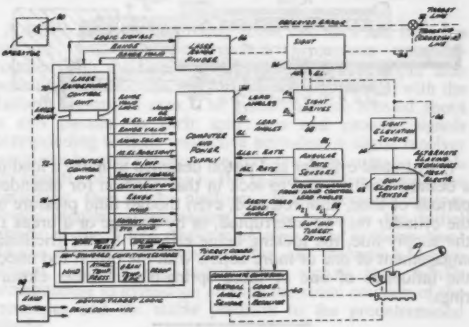


The invention relates to an ordnance item arming wire, of the type in which one end is anchored and the other end holds a fuze or the like in unarmed condition, and a housing for the wire, in the form of a generally U-shaped strip of plastic, rubber or the like forced into a groove or otherwise fastened to the ordnance item so that the open edges of the strip are forced together for protecting the wire against the weather and aerodynamic forces yet can be forced apart to permit sliding of an attachment bridle along the wire to an optimum position for attachment to any of variously positioned stations on different launcher racks.

3,575,085
ADVANCED FIRE-CONTROL SYSTEM

William E. McAdam, Jr., Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 21, 1968, Ser. No. 754,344
Int. Cl. F14f *3/08;* **F41f** *3/12, 3/00*
U.S. Cl. 89—41R **36 Claims**



A fire-control system for vehicle or tank control that provides a high first hit probability. The system is highly stable because of a sampling concept and is highly accurate because of the handling of nonstandard conditions. Reliable operation is provided for a moving tank or target, or both, and for noncoaltitude conditions.

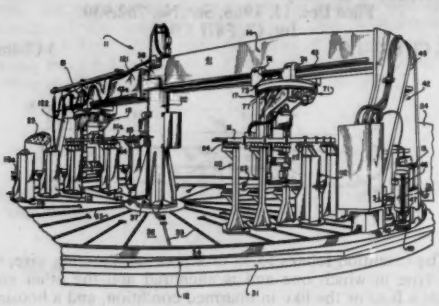
3,575,086
ROUTING MACHINE

Lionel G. Davis, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed July 3, 1969, Ser. No. 838,852
Int. Cl. B23c *1/16*
U.S. Cl. 90—13.5 **11 Claims**

A routing machine having substantial automatic capability to route one or more workpieces at once which will conform to a template wherein the routing machine has a capability of 360° movement to rout work items of complex radii. The machine in the preferred embodiment comprises a pair of horizontally extending boom arms which are independently rotatable about a central pivot post. Each boom arm has a

spindle assembly which moves radially along the boom arm from the centerpost and which carries the tracer to follow a template pattern and a router which cuts a workpiece to duplicate the contours of the template. Each boom arm is



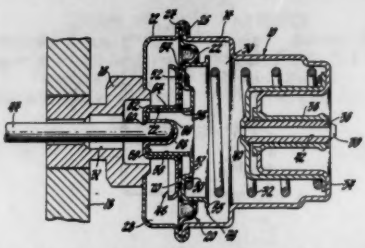
complete in itself and is independently controllable to trace a template and to rout workpieces mounted upon workstands whose positions are radially adjustable to fit the configuration of the desired template and workpiece.

3,575,087
LOCKING CYLINDER
Walter A. Sherwood, Hempstead, N.Y., assignor to Lourdes Industries, Inc., Farmingdale, N.Y.
Filed Nov. 18, 1968, Ser. No. 776,490
Int. Cl. F15b *15/26*
U.S. Cl. 92—23 **15 Claims**

A hydraulic cylinder and piston designed to move a load to a desired position and to lock in that position for extended periods of time, until released, even though fluid pressure to the cylinder may be interrupted, as by leakage or a break in the supply line, the locking being effected by the frictional engagement of one or more collets with the piston rod under the influence of one or more spring-biased collet closure rings.

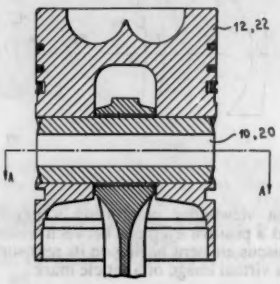
3,575,088
VACUUM MODULATOR
Richard J. Bauer, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.
Original application Aug. 30, 1968, Ser. No. 756,679, now Patent No. 3,545,070. Divided and this application June 2, 1970, Ser. No. 42,759
Int. Cl. F01b *19/00*
U.S. Cl. 92—98 **2 Claims**

A vacuum modulator for an automotive automatic transmission control system is shown as having a subassembly including a diaphragm separating an atmospheric chamber from a vacuum chamber to which engine vacuum is applied for automatic transmission control purposes. Two stiff members sandwich the diaphragm in the subassembly, the member on the engine vacuum side serving as a seat for a spring providing the modulator's spring bias. The other member is on the atmospheric pressure side and has a socket receiving a control rod which is for transmitting the modulator's output force to a modulator valve in the transmission control system. The vacuum side member has a sleeve portion which extends through an aperture in the diaphragm and into an annular channel in the atmospheric pressure side member so that the sleeve portion is positioned between the channel's inner and outer wall. The outer channel wall is staked to the sleeve portion to provide mechanical connection in the subassembly. Apparatus is also



shown for the staking operation which in cooperation with a radial section of the sleeve portion engaging the channel prevents crushing of the socket during the staking operation.

3,575,089
GUDGEON PIN CONNECTION FOR INTERNAL COMBUSTION ENGINE
James Millar Smith, Whittle-Le-Woods, Chorley, England, assignor to Leyland Motors Limited, Leyland, Preston, Lancashire, England
Filed Feb. 10, 1969, Ser. No. 798,077
Int. Cl. F16j *1/14;* **B23p** *15/10*
U.S. Cl. 92—187 **3 Claims**

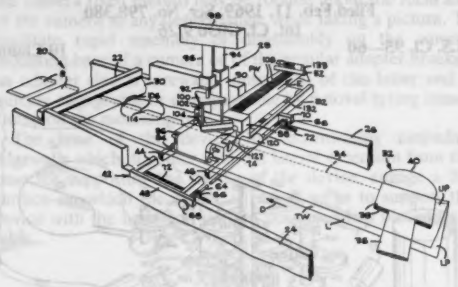


The specification describes the making of a gudgeon pin connection in the construction of internal combustion engine, the connection being characterized by the facing of the ends of the pin, which forms the connection between the small end of a connecting rod and piston of the engine, with material different of that of the pin itself deposited in layers of appropriate thickness.

3,575,090
METHOD AND APPARATUS FOR MAKING SQUARE BOTTOM BAGS FROM THERMOPLASTIC WEB MATERIAL
Corey T. Hook, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.
Filed Nov. 27, 1968, Ser. No. 779,453
Int. Cl. B26d *7/118;* **B31b** *1/96, 1/22*
U.S. Cl. 93—33 **8 Claims**

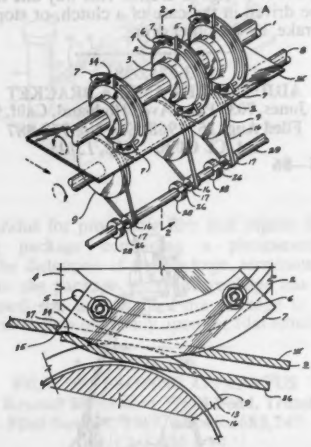
A folded web of thermoplastic material, such as polyethelene, is fed to a bagmaking machine set up to produce side weld bags. The folded edge of the web encounters a gusseting attachment which forms a reverse fold at this edge. Downstream of the gusseting attachment an apparatus is provided for removing a generally triangular web portion from the gusseted margin of the web by a heated cutting and sealing bar having a configuration corresponding to the removed web portion. During removal of a web portion, hereinafter sometimes referred to as a slug or a chip, areas coming in contact with the cutting and sealing bar are rendered molten. Immediately after removal, the chip is brought in firm contact with a paper web which is located immediately below the thermoplastic web and the molten edges of the chip become attached to the paper web. During

each cycle of the bag machine the paper web is indexed to present an additional area for reception of a chip. The chips are attached to the paper web in shingled or overlapping



relation. The web portion carrying the waste slugs or chips is fed to any suitable waste receptacle that may be located adjacent the bag machine.

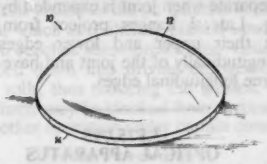
3,575,091
CUTTINGS REMOVER FOR SLOTTING MACHINES
Victor LaBantschnig, St. Louis, Mo., assignor to Orchard Container Corporation, St. Louis, Mo.
Filed Aug. 4, 1969, Ser. No. 847,146
Int. Cl. B31b *1/22, 1/92*
U.S. Cl. 93—36 **8 Claims**



For use with a slotting machine a device for speedy and efficient removal of the cuttings comprising a shaft carrying an arcuate die, a second shaft parallel to said first shaft and located downwardly thereof and carrying a grooved drum. Said drum is located spacedly beneath the die for movement of a blank therebetween with the groove presented for accepting said die during cutting operation. A friction-producing belt carried in said groove for engaging the cutting driven thereinto by said die for carrying and impelling said cutting outwardly of said machine.

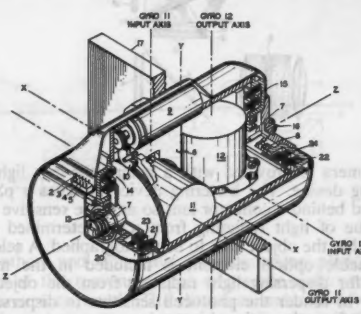
3,575,092
HIGHWAY DIVIDER BUTTON
Clarence S. Freeman, Box 1204, Beaumont, Tex. 77704
Filed May 22, 1969, Ser. No. 826,799
Int. Cl. E01c *23/16*
U.S. Cl. 94—1.5 **10 Claims**

For use along divider strips on highways, a button which is attached to the pavement to remind drivers to stay in divided lanes, the button preferably being comprised of an ionomer base which provides desirable abrasion-resistant and impact-resistant characteristics, the base having added thereto a suitable filler such as titanium oxide to impart a desired color thereto and being joined to the pavement through a preferably integral adhesive which is dry and nontacky at most temperatures, but which becomes adhesive at elevated temperatures to join the button to the pavement. The button,



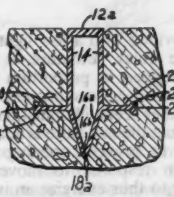
when joined to the pavement, is particularly advantageous in the absorption of impact or shock and does not transmit pavement-damaging shock to the pavement.

3,575,093
STABLE PLATFORM HAVING MEANS FOR REDUCING GYROSCOPE CONSTANT BIAS ERRORS
William Packard, Fair Lawn, and George W. Brown, Saddle Brook, N.J., assignors to The Bendix Corporation
Filed Oct. 7, 1968, Ser. No. 765,331
Int. Cl. G01c *19/30*
U.S. Cl. 74—5.34 **16 Claims**



A stable platform controlled about two axes and having a pair of single-degree-of-freedom gyroscopes rotatably mounted with their spin axes parallel and their input axes mutually perpendicular and forming a plane parallel with the platform controlled axes. The gyroscopes are rotated about an axis parallel to their spin axes and provide signals corresponding to their respective attitudes. A signal resolver responsive to gyro rotation resolves the gyro attitude signals into signals corresponding to the stable platform attitude for controlling the stable platform. Initial position sensors provide signals corresponding to the error in the initial attitude of the stable platform relative to a predetermined attitude. A torque command resolver, also responsive to gyro rotation, resolves the initial error signals into signals corresponding to gyroscope attitude for initial erection of the gyroscopes and the stable platform to the predetermined attitude.

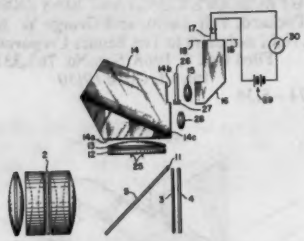
3,575,094
EXPANSION JOINT WITH WATER LOCK
Charles S. Hewitt, Hacienda Heights, and Gary L. Timothy, La Puente, Calif.
Continuation-in-part of application Ser. No. 548,121, May 6, 1966, now abandoned. This application Sept. 26, 1968, Ser. No. 771,380
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **2 Claims**



An elongated hollow expansion joint for the concrete decking of swimming pools, the top of the joint being flat and

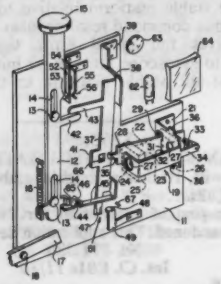
the lower portions of the sidewalls converge to a point and form a V in cross section, the walls at the apex of the V being adapted to separate when joint is expanded by contraction of the decking. Lateral flanges project from the sidewalls intermediate their upper and lower edges, said flanges extending longitudinally of the joint and have grooved beads along their free longitudinal edges.

3,575,095
OPTICAL APPARATUS
Ludwig J. Keck, Boulder, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 15, 1968, Ser. No. 767,711
Int. Cl. G01j *1/42*; G03b *19/12*
U.S. Cl. 95—10 **5 Claims**



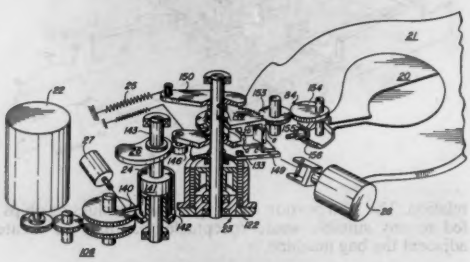
A camera is provided with a behind-the-lens light value metering device. The metering device includes a photocell mounted behind a collector lens so as to be sensitive to only the value of light radiating from a predetermined smaller area within the object area to be photographed. A selectively positionable optical element is included in the metering device for dispersing light radiating from the object area, thereby to render the photocell sensitive to dispersed light radiating from the entire object area.

3,575,096
LOW LIGHT INDICATOR FOR CAMERAS
Paul Justin Ernisse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 10, 1969, Ser. No. 790,359
Int. Cl. G03b *17/18*; G01j *1/44*
U.S. Cl. 95—10 **7 Claims**



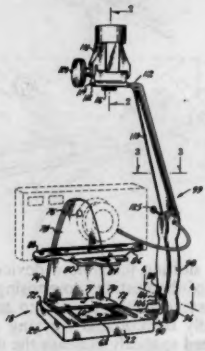
In a camera provided with a low light indicator system in which a sensitive relay armature is attractable by an electromagnet energized in proportion to scene brightness and thereby is caused to assume either of two positions depending on whether scene illumination is above or below a predetermined value, the armature is adapted when in one of its two positions to prevent opening of a switch which normally opens in response to movement of a camera operating member to thus energize an indicator lamp or the like when scene brightness is below such predetermined value.

3,575,097
LARGE HIGH-SPEED BETWEEN-THE-LENS SHUTTERS
Frank J. Gonzalez, Morton Grove, Ill., assignor to Bourns/CAI, Inc.
Filed Feb. 11, 1969, Ser. No. 798,380
Int. Cl. G03b *9/26*
U.S. Cl. 95—60 **10 Claims**



A pair of large, scissorlike shutter blades are arranged in tandem to operate through a four-step exposure cycle. Clutch and brake mechanisms cock, open, and stop the shutter motion. Both the clutch and brake include a pair of axially aligned drums with a coiled spring coaxially wrapped around them. The drums are not mechanically coupled with each other when the spring is relaxed, but they effectively become a single unit when the spring is wound up to grip the surfaces of the two aligned drums. This way one drum in the pair may be driven in the case of a clutch, or stopped in the case of a brake, by the other drum.

3,575,098
ADJUSTABLE CAMERA BRACKET
Richard B. Jones, 7035 Palm Ave., Highland, Calif. 92346
Filed Aug. 15, 1968, Ser. No. 752,887
Int. Cl. G03b *17/56, 15/03*
U.S. Cl. 95—86 **10 Claims**



A flat normally horizontal, rectangular camera mounting base is supported manually by a single handle connected at its lower end to the outer end of a leftward extension of the base near the front end of the left edge of said base, said handle normally extending upright but being pivotally adjustable forwardly relative to said extension about a transverse horizontal axis. A flash unit supporting arm extends upwardly from the upper end of the handle at a slight inclination relative thereto to within a short distance of a vertical plane containing the optical axis of a camera mounted on said base. A short horizontal extension extends inwardly from the upper end of said arm, said extension being normal to said vertical plane and bisected thereby. A flash unit mounting screw is provided in said plane on said arm extension and secures to said extension a flasher unit support which is rockable about a horizontal axis normal to said plane.

A right-angled adapter bracket is optionally mountable on the base and pivotally supports an elevated right-angled auxiliary camera supporting platform whereby the latter with the camera fixed thereto may be rotated about the focal axis of the camera to any desired angle while taking a picture. To facilitate rapid assembly or disassembly on the camera mounting base of a camera or of the angular adapter bracket, an adapter slug is screwable onto each of the latter and is quickly engageable or disengageable by a novel spring biased clamp on the mounting base.

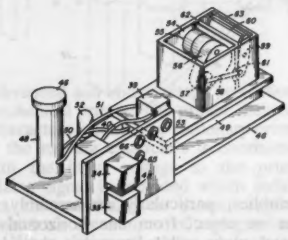
The base of the device has downwardly extending edgewalls which, together with the lateral extension from the base for supporting the handle of the device, engage a flat surface on which the device is placed so as to support the device with the handle in upright position when placed on a table.

3,575,099

DENTAL X-RAY PROCESSING APPARATUS

Gerald Isaak Pasternak Levenson, and Andrew Green, Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 14, 1968, Ser. No. 705,329
Claims priority, application Great Britain, Feb. 16, 1967, 7409/67
Int. Cl. G03d *3/16*
U.S. Cl. 95—89 **5 Claims**



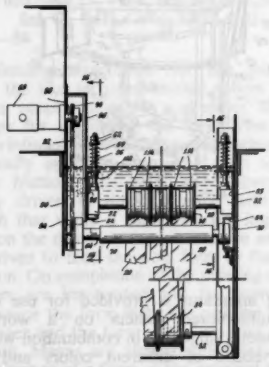
An apparatus for processing film that injects fluid into a self-sealing package containing a photosensitive film, measures the distension of the package, terminates the flow of fluid into the package when the package has reached a predetermined size and agitates the package to cause the injected fluid to flow uniformly upon the film emulsion.

3,575,100

FILM DEVELOPING APPARATUS

Edward B. Krause, 20 Meadow Wood Road, Trumbull, Conn.

Filed Nov. 27, 1967, Ser. No. 685,747
Int. Cl. G03d *3/14*
U.S. Cl. 95—94 **7 Claims**



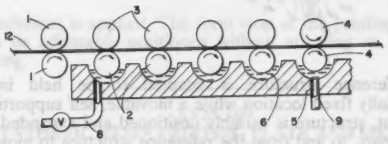
Automatic film developing apparatus for processing continuous length film, e.g. movie film. Film is pulled in a helical path about a series of upper and lower freely rotatable guide spools mounted on upper and lower shafts. An auxiliary drive roll underlies the peripheries of the spools on the upper shaft, which is resiliently biassed upwardly. When the film tension reaches some preselected value, the upper spools are pulled down into driving engagement with the auxiliary drive rolls, thus reducing the tension. One end of certain upper shafts may be blocked from vertical movement to provide smoother operation under certain conditions.

3,575,101

METHOD AND APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL

Eric Thomas Smith, Eastleigh, and John Gerald Howe, Chesham, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1968, Ser. No. 755,103
Claims priority, application Great Britain, Sept. 1, 1967, 40109/67
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 **7 Claims**



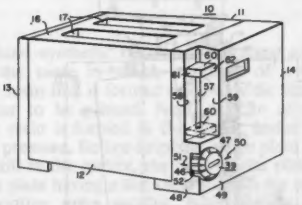
A method and apparatus for processing photographic material of the scavenger type where the used processing solution runs to waste. The direction and rate of flow of processing solution through any processing stage is the same as the direction and speed of the sensitized material transport through that stage, so that each part of the emulsion surface meets fresh solution in the first part of the processing stage and processing is continued with the same solution in the remaining parts of the processing stage. In this way processing is the same whether a long length or a single sheet of photographic material is processed.

3,575,102

TOASTER OPERABLE FROM END OR SIDE

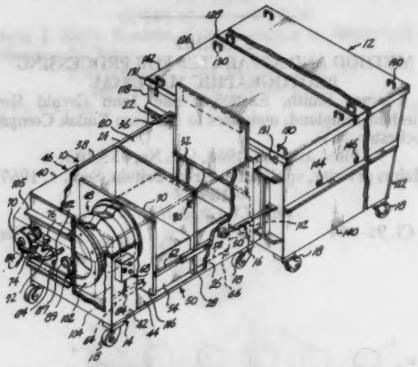
Bernard F. Parr, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1969, Ser. No. 807,748
Int. Cl. A47j *37/08*
U.S. Cl. 99—391 **11 Claims**



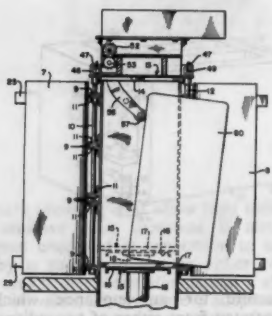
Control structure for an appliance which can be conveniently operated from either of two adjacent walls of the housing structure of the toaster. To this end, the control is provided with an actuator knob having adjacent surfaces, one of which lies in a plane parallel to one of the two adjacent walls mentioned above and the other of which lies in a plane parallel to the other of the two adjacent walls.

3,575,103
REFUSE COMPACTION HANDLING EQUIPMENT UTILIZING FLUIDS UNDER LOW PRESSURE
Ray E. Charles, 605 W. Mercer Place, Seattle, Wash. 98119
Filed Aug. 19, 1968, Ser. No. 753,582
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 3 Claims



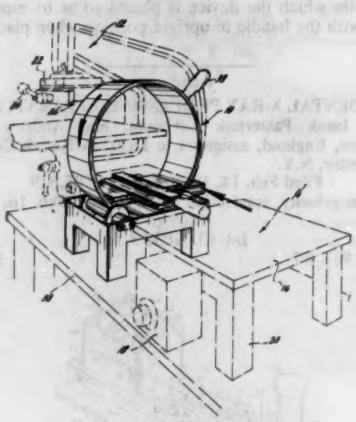
A reference structure is adapted to be held in a substantially fixed location while a movable, self supporting, fluid tight, structure is variably positioned and expanded, at least in part, to and from the reference structure to move a ram. The ram inturn enters a receiving chamber to contact and compress refuse therein and compressibly move the compacting refuse into a compaction chamber. The ram moves as both fluid pressure generating and regulating apparatus are operated to expand and then to retract the self-supporting fluid tight structure. Various stages of compression are undertaken, as necessary, when a variable position reactive compression plate or baffle is sequentially moved away from the receiving chamber to define different volume sizes of temporary subcompartments within the compaction chamber which often serves as an "on the spot" refuse container.

3,575,104
AUTOMATIC BALING PRESS
Dominick M. Aluotto, Brooklyn, N.Y., assignor to Antonio, doing business as National Baling and Equipment Co. Aluotto, Brooklyn, N.Y.
Filed Nov. 4, 1968, Ser. No. 773,183
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 1 Claim



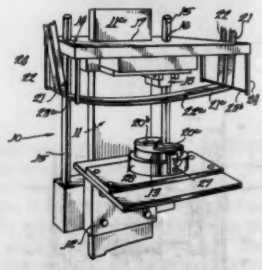
Baling press arranged with a power-operated door on each side and a power-operated ejecting mechanism. Power-operated locks are provided for the doors and manual control for each power-operated mechanism.

3,575,105
TRANSFER ASSEMBLY
Ralph Painter, Glendale, Ark., assignor to Arcoa Incorporated, Phoenix, Ariz.
Filed July 23, 1969, Ser. No. 844,085
Int. Cl. B65g *7/00*
U.S. Cl. 101—35 10 Claims



Transfer assemblies, particularly an assembly rotatable 180° to transfer an object from one horizontal plane to another horizontal plane, while inverting the object, the device including an open-ended cylinder having a miter bracket for slidably supporting the object to be transferred.

3,575,106
BED AND PLATEN PRINTER WITH RIBBON INKERS
Harold T. Collins, and Don L. Shofner, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Nov. 25, 1968, Ser. No. 778,494
Int. Cl. B41f *1/44, 17/14*
U.S. Cl. 101—41 3 Claims

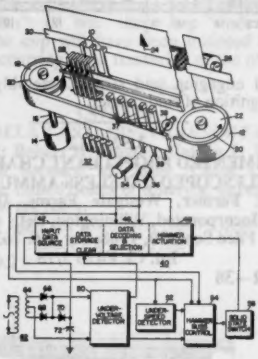


A stamping apparatus is provided for use in forming a composite multicolored indicia on a workpiece. The apparatus utilizes a single die in combination with a plurality of transfer ribbons of different colors and a rotatably mounted workpiece-supporting member whereby a plurality of multicolor impressions can be simultaneously made on the supported workpieces.

3,575,107
UNDERSPEED AND UNDERVOLTAGE PROTECTION FOR PRINTER

Earle B. McDowell, and Clifford M. Jones, Waynesboro, Va., assignors to General Electric Company

Filed June 2, 1969, Ser. No. 829,574
Int. Cl. B41j *9/38;* H02h *3/28*
U.S. Cl. 101—93 18 Claims



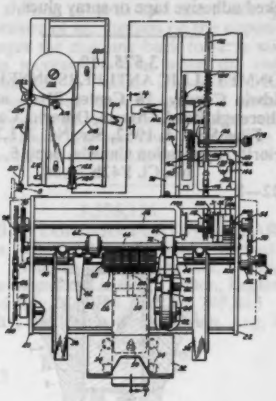
An underspeed and undervoltage protection system for an electromechanical printer. The printer includes a plurality of moving characters actuated by stationary print hammers. The speed of the moving characters is continuously monitored along with the input voltage to the printer system. A synchronizing signal is provided which indicates when the characters are positioned to permit application of buss voltage which is the source of energization of the print hammers. When the speed of the characters and the input voltage reach predetermined minimum values, power is applied to a power buss for energizing the print hammers, the application of power being delayed until the synchronizing signal indicates that the print hammers are not in position to be energized. Similarly, if the speed of the characters or the input voltage subsequently falls below the predetermined minimum values, the hammer power buss is synchronously deenergized so as to prevent damage to the printer mechanism.

3,575,108
WORKPIECE FEEDING ATTACHMENT FOR A TRAVELING CYLINDER ADDRESSING MACHINE

Robert J. Scranton, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Nov. 13, 1968, Ser. No. 775,342
Int. Cl. B41l *47/46;* B65h *5/02*
U.S. Cl. 101—56 12 Claims

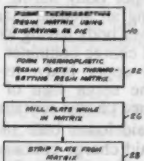
A form feeding attachment for use with addressing machines or the like includes friction rollers for feeding a form from a supply stack to a preprint station, and a conveyor tape for advancing the form from the preprint station to a printing station of the machine where it is held by an automatically operated stop, and then to a receiving hopper. The friction rollers and the conveyor tape are intermittently driven in timed relation with the printing machine such that while a form is being imprinted at the printing station the conveyor tape is inactive and the friction rollers are driven to feed the next form in the stack to the preprint station. On completion of the printing operation, the friction rollers are inactivated and the conveyor tape is driven to advance the form from the printing station to the receiving hopper and the form at the preprint station to the printing station. Means are also provided for detecting the presence or absence of a form at the preprint station and, if the conditions of form presence or absence are not satisfied, the machine is shut down without loss of a printing operation at the printing station. Self-regulating means are provided to adjust the timing of the form stopping and detecting means to accommodate slight differences in the machines to which the attachment is applied. The form stop at the printing station can be adjustably positioned without affecting its drive or timing.



3,575,109
SYNTHETIC RESIN PRINTING PLATE AND METHOD OF MAKING SAME

Richard T. Wall, Westport, Conn., assignor to National Electrotype Co., Inc., New York, N.Y.

Filed May 29, 1968, Ser. No. 732,947
Int. Cl. B41n *1/22*
U.S. Cl. 101—401.1 12 Claims



A molded synthetic resin printing plate and method of making the same in which a matrix of a thermosetting synthetic resin first is formed using as a die the engraving of the matter to be printed. Next, a plate of thermoplastic synthetic resin is formed in the matrix under the action of heat and pressure. Before stripping of the plate and while the plate is still in the matrix, the back of the plate is milled to provide a plate having a thickness suitable for use on existing rotary printing press saddles. After milling, the plate is stripped from the mold and is assembled in a hemicylindrical female mold member with a heated hemicylindrical male mold member and a wet blanket and the mold is clamped. After a short period of time the entire assembly is cooled, the mold is disassembled and the plate is removed. In this way there is produced a synthetic resin printing plate conforming to the shape of the printing press saddle and from which plate high fidelity reproductions of the original can be printed directly. Because the plate conforms to the curvature

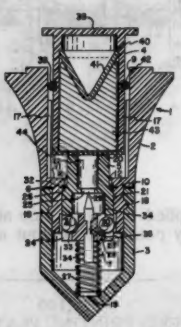
of the press saddle the tendency present in semiflexible flat plates to straighten is obviated. In this manner a hard surfaced, semiflexible plate can be attached to the printing press saddle conveniently and securely merely by using double-backed adhesive tape or spray glues.

3,575,110

NONMETALLIC ANTI-PERSONNEL MINE

Kenneth Edwin Conroy, 18 Center Blvd., and Scott Lynn, 452 Roxborough Road, Ottawa, Ontario, Canada

Filed Sept. 4, 1962, Ser. No. 221,376
Claims priority, application Canada, Sept. 5, 1961, 831,066
Int. Cl. F42b *23/00*
U.S. Cl. 102—8 **1 Claim**



A two-piece, antipersonnel mine adapted to be driven into the ground comprising, a cylindrical upper body, there being an upper axial bore and a lower axial bore in said upper body, said lower bore being of a smaller diameter than said upper bore; a lower tubular body detachably secured to said upper body, said upper body flaring outwardly towards its upper end and having an annular planer surface on its top face thereof, said lower body having its lower end tapering to a point; a cylindrical charge container axially slidable in said upper bore of said upper body, its upper end normally protruding above the upper face of said upper body; an explosive charge in said charge container; a detonator carrier axially slidable in said lower bore of said upper body and normally abutting said charge container; a detonator in said detonator carrier; a firing mechanism for detonating said detonator and said charge comprising, a firing pin carrier axially slidable in the lower portion of said detonator carrier; a pair of detent balls housed in said firing pin carrier and normally retained therein by the lower wall of said upper body; a firing pin fixed in axial relation in said firing pin carrier and a coil spring axially disposed in the lower portion of said lower body and normally biasing said firing pin carrier, said detonator carrier and said charge container in an upward direction in said mine, whereby when said charge container is depressed, said detonator carrier and said firing pin carrier are moved downwardly to release said balls from said firing pin carrier and into said lower portion of said lower body, whereby said coil spring will move said firing pin carrier upwardly to fire said detonator and said charge.

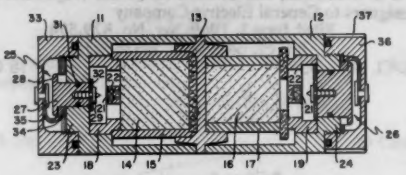
3,575,111

SIGNALING DEVICE HAVING MANUAL FIRING MEANS

Raymond L. Richardson, Bloomfield, Ind., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 28, 1969, Ser. No. 819,597
Int. Cl. F42b *13/44*
U.S. Cl. 102—37.8 **5 Claims**

A pyrotechnic signal having a housing containing a quantity of pyrotechnic material and a primer for igniting said pyrotechnic material, a manually actuated striker assembly slidably attached to said housing having a firing pin on the inner end thereof and a protective cap threadedly attached to said housing and having a safety clip attached



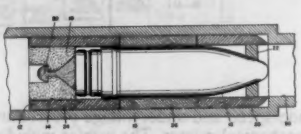
thereto and engaging said striker assembly for preventing accidental ignition of said primer.

3,575,112

SEGMENTED PROPELLANT CHARGE FOR TELESCOPED CASELESS AMMUNITION

Leonard J. Farmer, Westgate Farms, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 30, 1968, Ser. No. 763,872
Int. Cl. F42b *5/18*
U.S. Cl. 102—38 **6 Claims**



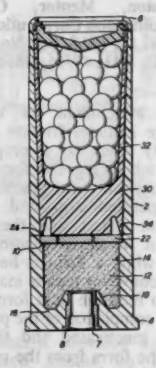
A segmented propellant charge for telescoped caseless ammunition is provided. The propellant charge is prepared from at least two sections of molded propellant granules having differing burning rates. These sections are united in order of increasing burning rate to form the segmented propellant charge. The segmented propellant charge provides increased ballistic efficiency for telescoped caseless ammunition.

3,575,113

PROGRESSIVE BURN SHELL

Clifford Logan Ashbrook, 5027 Cheene, Houston, Tex., and Wilson Gordon Wing, 33 E. Rivercrest Drive, Houston, Tex. 77043

Filed Feb. 26, 1968, Ser. No. 708,223
Int. Cl. F42b *7/02, 7/08*
U.S. Cl. 102—42 **7 Claims**



A shotgun shell designed to generate a lower and more extended pressure curve upon ignition of the powder. The shell consists of a conventional casing, primer and shot cup,

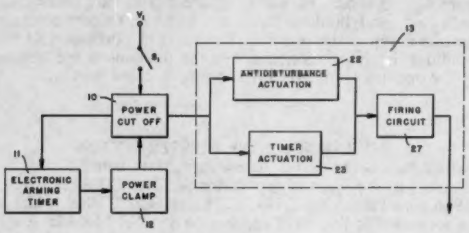
the latter being made of any of a number of configurations and materials. Disposed intermediate the primer end and in covering relation to the powder is a pressure plate that conforms to the cross-sectional shape of the casing interior. The pressure plate, in preferred form, contains a plurality of apertures so that upon application of a specified relatively low pressure, the surface area of the plate which the apertures define is caused to fracture, thus reducing the pressure in the powder chamber of the casing. As a result, the increasing kinetic energy generated by the continued burning of the powder (which is normally utilized to "initiate movement" of the static shop cup) may be applied toward the "acceleration" of the shop cup since the initial movement of the cup will have been initiated by the low-pressure force occurring upon fracturing of the plate.

3,575,114

TIME DELAY ANTI-DISTURBANCE FAZE

Donald G. Quist; Robert H. Forster; Gaylon L. West; Harry C. Loyal, and Bernard M. Jones, China Lake, Calif., assignors to the United States of America, as represented by the Secretary of the Navy.

Filed Aug. 16, 1968, Ser. No. 753,260
Int. Cl. F42c *11/06*
U.S. Cl. 102—70.2 **7 Claims**



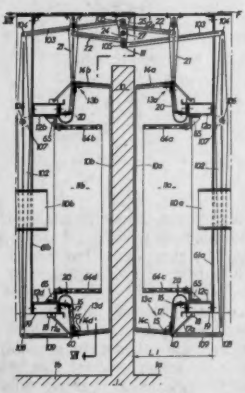
A fuze having an electronic arming delay timer, an antidisturbance firing mechanism, and a mechanical clock timer to detonate the fuze after a prescribed period of time if the antidisturbance firing mechanism is not actuated.

3,575,115

STABILIZING SYSTEM FOR A GROUND EFFECT

Francois Louis Giraud, Plaisir, France, assignor to Societe De L'Aerotrain, Paris, France

Filed July 5, 1968, Ser. No. 742,755
Claims priority, application France, Oct. 4, 1967, 123,279
Int. Cl. B60v *1/04*
U.S. Cl. 104—23 **10 Claims**



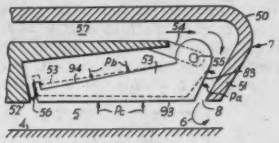
In a ground effect machine such as a vehicle travelling along a track with the interposition of sustaining and guiding cushions, the shifting of the machine out of its proper position with reference to the track is corrected not only by the fact that an increase in pressure in a cushion to one side of the machine and reduced leak on said side of the machine caused by the shifting towards said same side, produces a reduction in pressure of the cushion on the opposite side and consequently urges the machine back towards said opposite side, but to an increased extent when the objectionable shifting has reached a value above a predetermined threshold; this increased compensation is obtained by a mechanical or pneumatic connection between the cushions on the opposite sides of the machine, whereby the difference in pressure between the cushions is amplified.

3,575,116

GAS-CUSHION LOAD-SUPPORTING APPARATUS

William Barrie Hart, Burwell, and Michael Charity, Marchwood, Southampton, England, assignors to Hovercraft Development Limited, London, England

Filed July 18, 1968, Ser. No. 745,863
Claims priority, application Great Britain, Aug. 3, 1967, 35,684/67
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 **5 Claims**



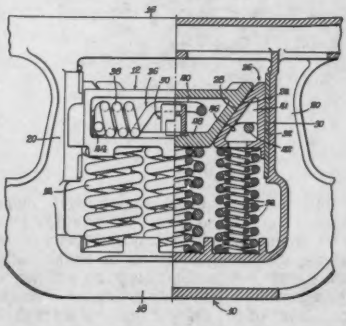
Gas cushion load supporting apparatus, particularly for a tracked air cushion vehicle, has nozzles for forming a gas curtain for containing the cushions. The nozzles are adjustable and controlled by actuating units responsive to local cushion pressure. When the cushion pressure increases locally the mass flow of curtain gas also increases locally. If the vehicle tends to roll the downgoing side of the cushion is stiffened which resists the rolling tendency.

3,575,117

RAILWAY TRUCK BOLSTER SNUBBER

Carl E. Tack, Elmhurst, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed June 12, 1968, Ser. No. 736,420
Int. Cl. B61f *3/08*, *5/06*, *5/12*
U.S. Cl. 105—197 **13 Claims**



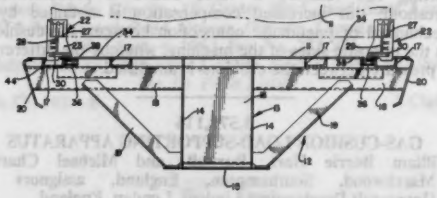
A helical torsional spring is utilized to urge the friction shoes of a snubbing arrangement upwardly into the inclined bolster pockets in which the shoes are carried. A wedge between the bolster bottom wall and a U-shaped central portion of the spring is used to apply a torsional load on the spring.

3,575,118

MULTIPURPOSE RAILROAD CAR

Harold E. Gramse, Chicago Heights, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 8, 1968, Ser. No. 774,272
Int. Cl. B65j 1/22; B60p 7/08
U.S. Cl. 105—366 8 Claims



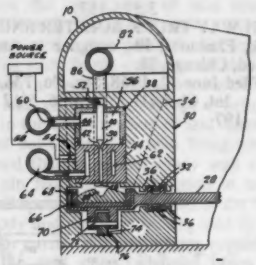
A railway flatcar readily interchangeable for container and trailer-on-flatcar operation having a container bracket arrangement which is adjustable for supporting different length containers. The arrangement includes container corner-supporting brackets which are movable in slot structures in the deck to certain container support positions and which are stored in aperture structures to one side of the slot structures below the deck in inoperative position. The slot and aperture structures are constructed to conform to and combine with the conventional flatcar understructure.

3,575,119

ELECTRICAL ARC APPARATUS FOR DISINTEGRATING AND INCINERATING A SLURRY ORGANIC MATERIAL

Andrew W. Marr, Jr., 325 Wheeler S.W., Ardmore, Okla.

Filed July 5, 1968, Ser. No. 742,804
Int. Cl. F23g 5/06, 5/10; H05b 7/18
U.S. Cl. 110—8 5 Claims



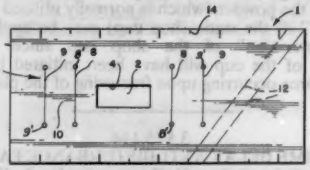
An apparatus for disintegrating and incinerating a concentrated slurry of solid organic material. The apparatus having an arcuate tunnel, a series of pairs of arc forming electrodes spaced along and mounted within said tunnel and electrical source means connected to each pair of said arc forming electrodes. Advancing means continuously to advance a layer of the organic material through the arcuate tunnel and consecutively into juxtaposition to the arcs formed between each of the pairs of arc electrodes wherein the temperature of that portion of said organic material in juxtaposition to each of said pairs of arc forming electrodes is abruptly raised to from about 2,000° F. to about 15,000° F., at which temperatures the bonds between the carbon and other atoms are dissolved, and means to maintain an oxidizing atmosphere within said tunnel.

3,575,120

BOUND BUTTONHOLE BINDING HOLDING TEMPLATE

Patricia A. Paulson, La Jolla Fabrics 7719 Fay Ave., Poway, Calif., and Margaret J. Lahey, La Jolla, Calif., assignors to said Lahey assignor to said Paulson.

Filed Mar. 14, 1969, Ser. No. 807,278
Int. Cl. D05b 35/06
U.S. Cl. 112—136 7 Claims



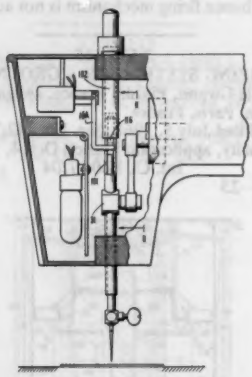
Described herein is a combined template and binding holding apparatus made of a thin flexible material and defining an elongated rectangular opening near one longitudinal end and transverse parallel slits are spaced from each end of the opening and are oriented transverse to the opening. Portions between adjacent slits are elastically deflected, and binding tapes are inserted therein and are extended across the opening. The resilient portions hold the bindings firmly positioned across the opening as the outline of the opening is traced with a sewing machine needle.

3,575,121

SEWING MACHINE CONSTRUCTION

Felix J. Berube, 153 River St., Sanford, Mass. 04073

Continuation-in-part of application Ser. No. 722,522, Apr. 1, 1966, now Patent No. 3,471,325, dated Oct. 7, 1969, which is a continuation-in-part of application Ser. No. 668,283, Aug. 30, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 432,642, Feb. 15, 1965, now abandoned.
This application June 16, 1969, Ser. No. 844,708
Int. Cl. D05b 69/36
U.S. Cl. 112—221 5 Claims



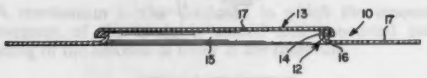
A sewing machine having a mechanism for disengaging the needle bar of the machine from the drive mechanism when the needle carried by the needle bar hits an impenetrable object such as a button, zipper or piece of material. The disengaging mechanism of the preferred embodiment includes an elongated sleeve containing a needle bar tensioned to a fixed axial position within the sleeve by axially aligned spring means and other elements adapted to remain in the axial position under normal operating forces but adapted to permit the needle bar to move axially with respect to the sleeve upon application of abnormal forces when one of the elements is thrown out of normal position. In a modification the disengaging mechanism includes a collar surrounding the needle bar and carrying a spring tension ball

bearing adapted to move between a depression in the longitudinal groove in the needle bar. An electrically controlled breaking mechanism disengages the power source of the sewing machine when the needle bar is disengaged in either of the embodiments.

3,575,122
METHODS OF CONSTRUCTING A HATCH FRAME AND COVER THEREFOR

John A. Brossart, Jr., Munster, and William W. Lannin, Hammond, Ind., assignors to Stanray Corporation, Chicago, Ill.

Filed July 3, 1968, Ser. No. 750,404
Int. Cl. B21d *51/40*
U.S. Cl. 113—116 9 Claims



Methods for forming hatch frames integral with a roof sheet for a car or container. In one embodiment the hatch frame is constructed so that the cutout portion forming the hatch opening is used to provide a hatch cover. Another embodiment includes the formation of a hatch frame and cover member, simultaneously with corrugations in the roof sheet.

3,575,123
MARINE STRUCTURE COATED WITH AN ACRYLIC INSOLUBLE WATER-SWELLABLE POLYMER

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 654,044, July 5, 1967, and a continuation-in-part of 650,259, June 30, 1967, now abandoned, and a continuation-in-part of 567,856, July 26, 1966, now Patent No. 3,520,949, dated July 21, 1970.
This application July 1, 1969, Ser. No. 838,269
Int. Cl. C03c *17/00*
U.S. Cl. 114—67R 22 Claims

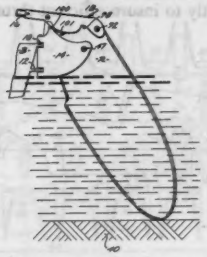
Hydrophilic acrylic resins are applied to the underwater portion of boats to reduce the drag on moving the boats through water. The resins are useful in antifoulant compositions.

3,575,124
KICKUP RUDDER APPARATUS FOR BOATS

Hobard L. Alter, Laguna Beach, Calif., assignor to Coast Catamaran Corporation, Capistrano Beach, Calif.

Filed June 16, 1969, Ser. No. 833,569
Int. Cl. B63h *25/06*; B63b *39/06*
U.S. Cl. 114—165 7 Claims

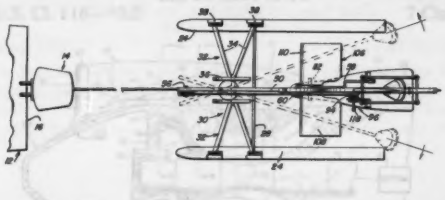
A kickup rudder apparatus for a boat to be sailed off a beach. The rudder is movable between a lowered position, a dangling intermediate position, and a raised position. As a boat is sailed onto a beach the rudder automatically kicks up from its lowered position into its dangling position when the rudder engages the ground. As the boat is sailed away from a beach the rudder may be moved from its raised position through its intermediate position to its lowered position as it moves into deeper water. Control of rudder movement between the three positions is effected solely through manipulation of the tiller.



3,575,125
SURFACE VEHICLE WITH WINGED AND COUNTERBALANCED OPERATOR'S STATION

Aaron L. Welsh, 116 Smith Place, and Robert T. Cribb, 115 Smith Place, Warner Robins, Ga. 31093

Filed Apr. 25, 1969, Ser. No. 819,276
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 4 Claims



An elongated water planing assembly adapted to be pulled over and to plane upon the surface of a body of water and including an upwardly projecting support structure from whose upper end an elongated beam is supported for swinging in a vertical plane about a horizontal axis extending transversely of the support structure and the beam intermediate the opposite ends of the latter. The beam includes occupant supporting structure on its trailing end and an expansion spring is secured between its forward end and a lower portion of the support structure for counterbalancing the weight of the occupant on the trailing end of the beam. Further, the occupant-supporting structure at the trailing end of the beam includes a control for remotely adjusting the effective tension of the expansion spring.

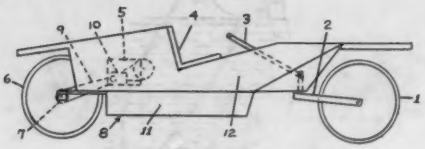
3,575,126
AMPHIBIOUS VEHICLE

Viljo Kalevi Karvonen, Lynn, Mass. (14 Falmouth Ave. Scarborough, Ontario, Canada)

Filed Dec. 16, 1968, Ser. No. 784,546
Int. Cl. B63f *3/00*
U.S. Cl. 115—1 3 Claims

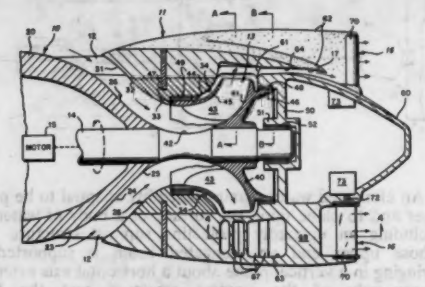
A surface vehicle for traveling on land or water with high-speed capability on both land and water. The vehicle has two cylindrical buoyant barrels mounted at either end of substantial buoyancy billets. The motion of the barrels is about a horizontal axis perpendicular to the direction of motion of the vehicle. Both front and rear barrels have paddles on their surface. The paddles on the rear motor-driven barrel provide propulsion in the water and the paddles on the front barrel encourage it to roll on the water at high speeds. The barrels have raised rims for travel on land so that the paddles are not damaged. The front barrel has the further capability of turning about an axis perpendicular to its direction of rotation to provide steering in water and land.

The fixed rims on both front and rear barrels are capable of differential motion relative to each other to facilitate turning on hard surfaces. The buoyancy billets between the barrels are arranged to control the depth of immersion of the barrels and consequently to insure efficient thrust from the paddles



and to assist in carrying larger water-borne loads which if dependent solely on the buoyant barrels would cause the barrels to be immersed so deeply in the water as to render propulsive thrust from the paddles of the rear barrel very low because of dissipation of energy in vertical components of the paddle motion in the water.

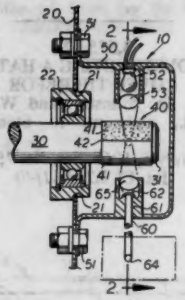
3,575,127
VEHICLE PROPULSION SYSTEM
George F. Wislicenus, and Maurice M. Sevik, State College, Pa., assignors to the United States of America, as represented by the Secretary of the Navy.
Filed May 19, 1969, Ser. No. 825,698
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 **13 Claims**



A propulsion system for fluid-submerged bodies, such as torpedoes or submarines, including a mixed flow impeller for increasing the energy of and for introducing radial and transverse direction components into a fluid flow directed therethrough and a pump casing connected by flow inlet vanes to the aft end of the submerged body which includes ducting terminating in exhaust openings having rotatable jet stream deflection cylinders for exhausting at least a major portion of the impeller exhaust to propel and steer the submerged body, and which may include ducting terminating in arcuately extending exhaust slots arranged between adjacent jet stream exhaust openings for exhausting a substantial portion of the flow to inhibit flow separation at the aft end of the pump casing.

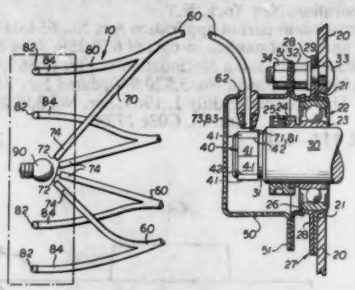
3,575,128
COLOR CODED ROTATION-RATE INDICATOR
Stuart D. Pool, Wheaton, and Charles V. Everett, Warrenville, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Nov. 19, 1968, Ser. No. 776,950
Int. Cl. B60q *1/54*
U.S. Cl. 116—57 **1 Claim**

An apparatus for indicating to an operator the rotational rate of an element that is located remotely from the operator. A multicolored reflector is secured to the rotating element and a beam of light reflected off said multicolored reflector is transmitted through a fiber optic cable to the operator's station. The operator can by observing the beam of light



emitted from the fiber optic cable ascertain the rotational rate of the element.

3,575,129
ROTATION MONITOR
Herbert D. Sullivan, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Dec. 4, 1968, Ser. No. 781,090
Int. Cl. B60q *1/54*
U.S. Cl. 116—57 **1 Claim**

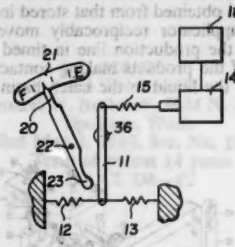


An apparatus for indicating to an operator the rotational rate of an element that is located remotely from the operator. A multicolored reflector is secured to the rotating element and a beam of light reflected off said multicolored reflector is transmitted through a fiber optic cable to the operator's station. The operator can by observing the beam of light emitted from the fiber optic cable ascertain the rotational rate of the element.

3,575,130
INDICATING MECHANISM
Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 31, 1968, Ser. No. 749,144
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **10 Claims**

A mechanism is disclosed for indicating when toner should be added to a toner reservoir in an electrographic machine. A blade positioned in the reservoir is urged in a direction which actuates a switch if toner in the reservoir offers less than a given amount of resistance to movement in that direction. When the level is low, resistance offered by the

toner is below the given amount and the switch is actuated indicating to an operator that toner should be added.



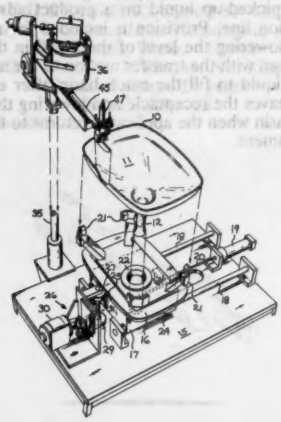
A mechanism is also disclosed in which the amount of movement of the blade is sensed and converted into a reading of the amount of toner in the reservoir.

3,575,131

APPARATUS FOR APPLYING BONDING MATERIAL TO ANNULAR SEALING SURFACES

Larry John Lohmann, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed May 8, 1968, Ser. No. 727,605
Int. Cl. B05c *5/00*
U.S. Cl. 118—8 10 Claims



Coating apparatus for applying a uniform layer of extrudable bonding material onto an annular sealing surface of a hollow, glass part of the type suitable for fabricating cathode-ray, picture tube, envelopes. The layer is applied at a constant weight per lineal dimension in precisely centered location by minimized delivery nozzle movement during dispensing of the bonding material onto a nonsymmetrical sealing edge surface.

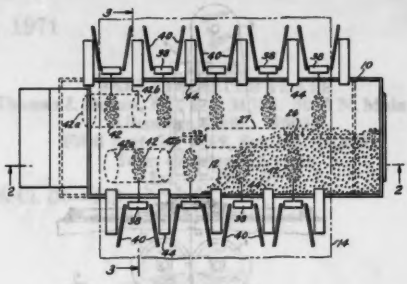
3,575,132

VAPOR DEPOSITION APPARATUS

Herbert H. Francisco, and Anthony P. Martocci, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Filed Oct. 25, 1968, Ser. No. 770,503
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.5 1 Claim

A vacuum chamber contains a crucible of coating material disposed below the path of a moving substrate to be coated. A plurality of electron guns directs energy toward a first predetermined area on the surface of said material whereby the material within said area is vaporized. The crucible is then moved whereby said energy is directed toward a second predetermined area on the surface of said material while said first area is disposed so as to receive additions of the coating



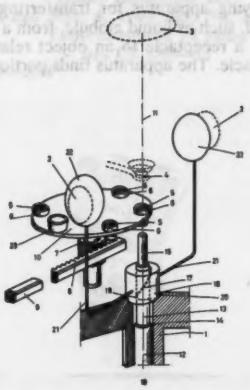
material from a plurality of material supply means disposed above said crucible.

3,575,133

APPARATUS FOR EVAPORATION BY LEVITATION IN AN ULTRAVACUUM

Jean Van Audenhove, Mol; Jean Joyeux, and Maurits Parengh, Geel, Belgium, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed Mar. 19, 1969, Ser. No. 808,580
Claims priority, application Belgium, Apr. 5, 1968, 56808
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.5 7 Claims



An apparatus for deposition of thin coatings on substitutes by evaporation of solid material in an ultravacuum. The apparatus has an inductor to effect levitation and heating of the material to be evaporated and a transfer device to bring a succession of such pieces into position. The transfer device is operable from the outside of the device by use of two bars which pass through seals in the wall of the device.

3,575,134

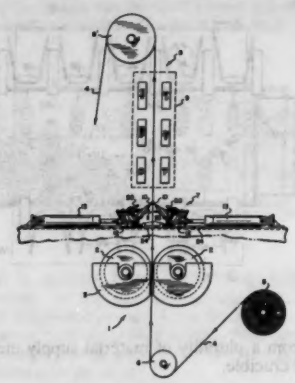
OPPOSED BLADE COATER

Richard J. Quint, Dixfield, Maine, assignor to Oxford Paper Company, Rumford, Maine

Filed Feb. 8, 1968, Ser. No. 703,924
Int. Cl. B05c *11/02*
U.S. Cl. 118—122 11 Claims

An opposed blade coating system for simultaneously coating the opposite sides of a paper web, the system including an applicator for applying coating material to the opposite sides of the web, a flexible blade unit comprised of a pair of blades having flat beveled working surfaces engaging

opposite sides of the coated web in opposed relationship with each other for metering the layer of coating on the opposite



sides of the web, and drying mechanism for thereafter drying the coated web.

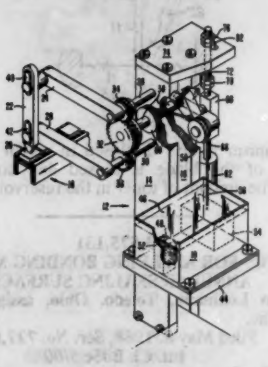
3,575,135

LIQUID-APPLYING APPARATUS

John Wallace, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 24, 1969, Ser. No. 801,655
Int. Cl. B05c *1/02*
U.S. Cl. 118—243 **10 Claims**

A liquid-applying apparatus for transferring a measured amount of liquid, such as liquid globule, from a body of such liquid stored in a receptacle to an object relatively remote from the receptacle. The apparatus finds particular usage on production lines where it is desired to apply a small amount of liquid substance to each product undergoing fabrication as it steps along the line. The receptacle is provided with an interior catch basin or reservoir for holding a measured amount of liquid obtained from that stored in the receptacle. A dauber or applicator reciprocably moves between the receptacle and the production line in timed relation to the advancement of the products making contact at one end of its motion with the liquid in the catch basin to pick up the

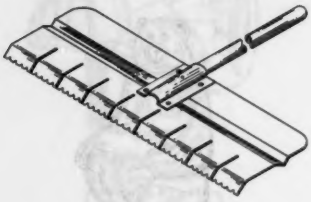


liquid to be delivered and depositing at the other end of its motion the picked-up liquid on a product advancing along the production line. Provision is included for automatically raising and lowering the level of the liquid in the receptacle in synchronism with the transfer motion of the applicator and raising the liquid to fill the catch basin after each time the applicator leaves the receptacle and lowering the liquid level below the basin when the applicator returns to the receptacle for replenishment.

DESIGNS

APRIL 13, 1971

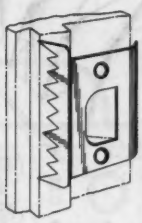
220,420
LAWN RAKE
Samuel W. Rothwell, 5624 N. G St., Spokane, Wash.
Filed May 2, 1969, Ser. No. 16,987
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13



220,421
ADJUSTABLE EXTENSION GRIP
Daryel C. Zutter, 1203 Washington Ave., Toppenish, Wash. 98948
Filed Mar. 30, 1970, Ser. No. 22,084
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—29

220,422
CAN OPENER OR THE LIKE
Thomas E. Hanson and William L. Wolfe, Syracuse, N.Y., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.
Filed Apr. 9, 1970, Ser. No. 22,358
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—36

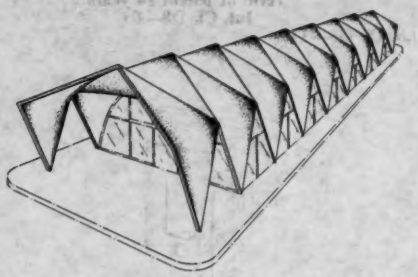
220,423
SAFETY KEEPER PLATE
Thomas J. Dugan, P.O. Box 31356, 3019 N. Main St., Alhambra, Calif. 90031
Filed Sept. 24, 1969, Ser. No. 19,278
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—117



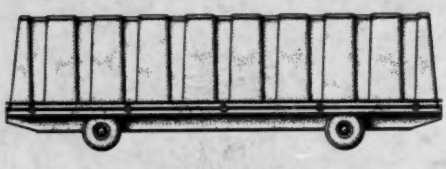
220,424
GROUNDING CLIP
Eugene D. Hindenburg, Sycamore, Ill., assignor to Holub Industries, Inc.
Filed Sept. 4, 1969, Ser. No. 18,995
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—230

220,425
SHIPPING CONTAINER
Ralph V. Bardell, Homewood, Ill., assignor to Bennett Industries, Inc., Peotone, Ill.
Filed Jan. 9, 1969, Ser. No. 15,288
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—216

220,426
BUILDING SHELL
Lawrence A. Samuelson, Houston, Tex., assignor of fractional part interest to Michael D. Reifel, Houston, Tex.
Filed July 30, 1969, Ser. No. 18,463
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1



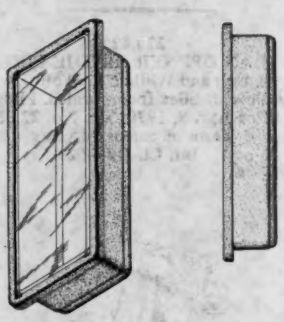
220,427
CARGO TRAILER
Arney C. Stensrud, Middletown, Ohio, assignor to TransporTrailer, Inc., Dayton, Ohio
Filed Mar. 20, 1970, Ser. No. 21,987
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



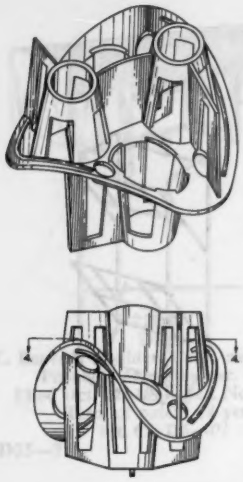
220,428
CHAIR
Dave Chapman, Chicago, and Kurt Mizen, Wilmette, Ill., assignors to Dave Chapman, Goldsmith & Yamasaki, Inc., Chicago, Ill.
Filed Nov. 3, 1969, Ser. No. 19,918
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1

220,429
CHAIR
Dave Chapman, Chicago, Douglas W. Anderson, Palatine, and Andrew L. Alger, Wilmette, Ill., assignors to Dave Chapman, Goldsmith & Yamasaki, Inc., Chicago, Ill.
Filed Nov. 6, 1969, Ser. No. 19,969
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1

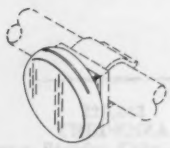
220,430
FIRE EXTINGUISHER CABINET
Richard A. Neumann, 510 13th Ave. NW., New Brighton, Minn. 55112
Filed Nov. 21, 1969, Ser. No. 20,223
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D16—2



220,431
TOWER PACKING FOR CHEMICAL DISTILLATION APPARATUS AND THE LIKE
Frederick W. Arndt, Bay Village, Ohio, assignor to Heil Process Equipment Corp., Cleveland, Ohio
Filed Nov. 28, 1969, Ser. No. 20,304
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2

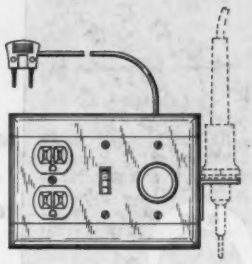


220,432
MAGNETIC PURSE FOR HOLDING FISHHOOKS OR SIMILAR ARTICLE
Lloyd J. Leroue, Rte. 2, P.O. Box 2360, Wapato, Wash. 98951
Filed June 27, 1969, Ser. No. 17,936
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—23

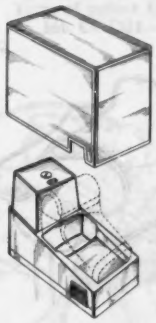


220,433
DENTAL ARTICULATING PAPER APPLICATOR
Kenneth E. McVey, Paulsen Bldg., Spokane, Wash. 99201
Filed Nov. 28, 1969, Ser. No. 20,296
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1

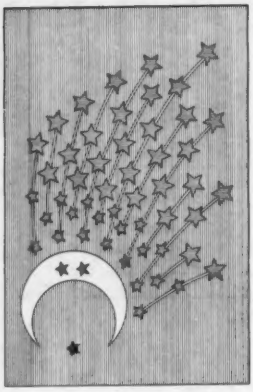
220,434
COMBINED TEMPERATURE CONTROL PANEL UNIT AND SUPPORT FOR SOLDERING IRONS AND THE LIKE
James C. Sewell, 4301 78th Ave. N., Brooklyn Park, Minn. 55429, and Gaylon T. Westlund, 2014 Emerson Ave. N., Minneapolis, Minn. 55411
Filed Feb. 17, 1969, Ser. No. 15,800
Term of patent 14 years
Int. Cl. D13—*03;* D8—*03*
U.S. Cl. D26—1



220,435
COMBINED STORAGE AND CHARGING CASE FOR AN ELECTRIC SHAVER
William J. Rakocy, Clifton, N.J., assignor to Ronson Corporation, Woodbridge, N.J.
Filed Mar. 26, 1970, Ser. No. 22,060
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15

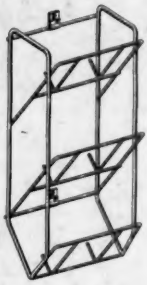


220,436
FLAG OR SIMILAR ARTICLE
Edna Ruth Senteney, P.O. Box 460, Rio Dell, Calif. 95562
Filed Feb. 20, 1970, Ser. No. 21,561
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—17

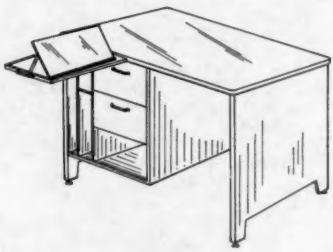


220,437
SADDLE SEAT
John R. Roberts, Jr., P.O. Box 106, Buford, Ga. 23235
Filed Nov. 17, 1969, Ser. No. 20,152
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—20

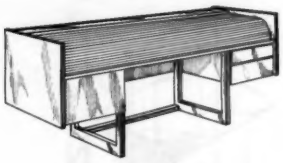
220,438
WALL-SUPPORTED RACK FOR BEVERAGE BOTTLE CARTONS
Herman M. Gross, 83 S. Stewart Road, Mansfield, Ohio 44905
Filed Feb. 18, 1970, Ser. No. 21,566
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—3



220,439
COMPUTER PROGRAMMER'S DESK
Andrew Fromel, 65 Hoefler Ave., Ilion, N.Y. 13357
Filed Dec. 8, 1969, Ser. No. 20,397
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D33—7

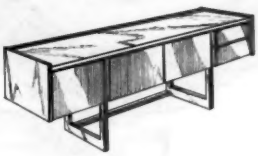


220,440
ROLL-TOP DESK
Jack L. Beavers, Boulder, Colo., assignor to Design Products, Inc., Boulder, Colo.
Filed Oct. 22, 1969, Ser. No. 19,665
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—7

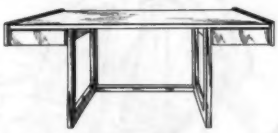


220,441
DESK
Jack L. Beavers, Boulder, Colo., assignor to Design Products, Inc., Boulder, Colo.
Filed Oct. 22, 1969, Ser. No. 19,674
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—7

220,442
CREDENZA
Jack L. Beavers, Boulder, Colo., assignor to Design Products, Inc., Boulder, Colo.
Filed Oct. 22, 1969, Ser. No. 19,664
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—13

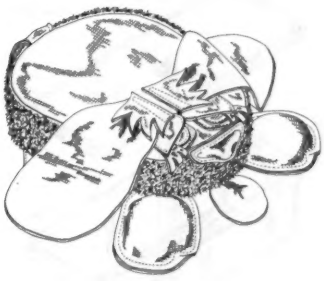


220,443
TABLE
Jack L. Beavers, Boulder, Colo., assignor to Design Products, Inc., Boulder, Colo.
Filed Oct. 22, 1969, Ser. No. 19,666
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—14

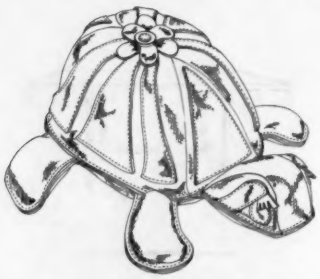


220,444
TOY WALRUS
Jennifer Jenkins, Rte. 3, Caldwell, Idaho 83605
Filed Jan. 9, 1970, Ser. No. 20,860
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

220,445
TOY BEAGLE
Jennifer Jenkins, Rte. 3, Caldwell, Idaho 83605
Filed Jan. 9, 1970, Ser. No. 20,861
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

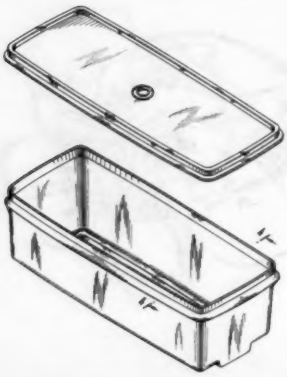


220,446
TOY TURTLE
Jennifer Jenkins, Rte. 3, Caldwell, Idaho 83605
Filed Jan. 9, 1970, Ser. No. 20,862
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

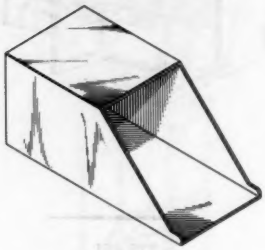


220,447
TRUNDLE TOY
Charles Bolstridge, 720 10th Ave. S., Nampa, Idaho 83651
Filed Apr. 9, 1970, Ser. No. 22,356
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

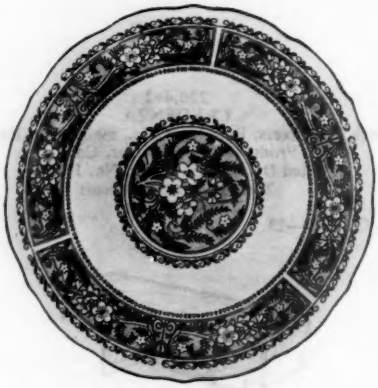
220,448
VEGETABLE CONTAINER OR THE LIKE
James B. Swett, Barrington, R.I., and Sidney Z. Smith, Worcester, Mass., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Jan. 28, 1970, Ser. No. 21,117
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—1



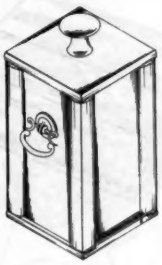
220,449
BREAD LOAF PROTECTOR
Jewell W. Davis, Box 361-X, Rte. 2, Pearland, Tex. 77581, and Robert M. Bish, 2112 Hackey, Houston, Tex. 77023
Filed Oct. 8, 1969, Ser. No. 19,461
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—6



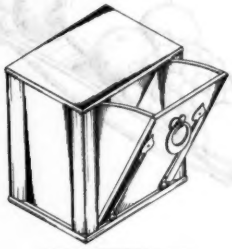
220,450
DINNER PLATE OR SIMILAR ARTICLE
Michael J. Szymanski, Camillus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Oct. 29, 1969, Ser. No. 19,614
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



220,451
WASTE RECEPTACLE OR THE LIKE
Peter E. Norquest, 2001 Hervey, Boise, Idaho 83705
Filed Feb. 25, 1970, Ser. No. 21,612
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D49—35

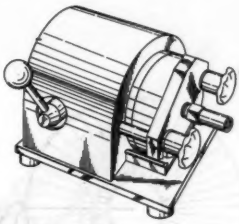


220,452
WASTE RECEPTACLE OR THE LIKE
Peter E. Norquest, 2001 Hervey, Boise, Idaho 83705
Filed Feb. 25, 1970, Ser. No. 21,608
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D49—35

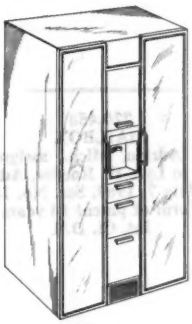


220,453
GUITAR
Paulo A. M. P. Nogueira, Sao Paulo, Brazil, assignor to Tranguillo Giannini S.A. Industria de Instrumentos de Cordas
Filed Aug. 26, 1969, Ser. No. 18,852
Claims priority, application Brazil Feb. 27, 1969
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1

220,454
GENERATOR FOR COMPRESSING CARBON DIOXIDE
Edward M. Klopp, Seville, Ohio, assignor to The Chemical Rubber Co., Cleveland, Ohio
Filed July 3, 1969, Ser. No. 18,052
Term of patent 14 years
Int. Cl. D15—*10*
U.S. Cl. D67—2

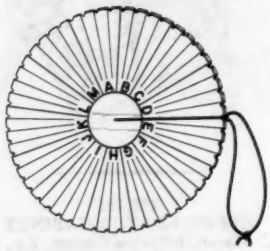


220,455
REFRIGERATOR CABINET
William C. Mason, Jefferson County, Ky., assignor to General Electric Company
Filed Dec. 10, 1969, Ser. No. 20,428
Term of patent 7 years
Int. Cl. D15—*11*
U.S. Cl. D67—3

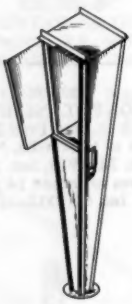


220,456
BOAT STANCHION
John Edie, 53 11th St., and Fred Burmann, 26 Arrow Lane, both of Hicksville, N.Y. 11801
Filed Jan. 22, 1970, Ser. No. 21,036
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1

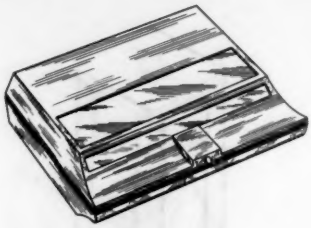
220,457
TELEPHONE NUMBER CHART
John D. Karle, 320 Chestnut St.,
Roselle Park, N.J. 07204
Filed May 28, 1969, Ser. No. 17,399
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1



220,458
MAILBOX
Robert J. Notes, Adrian, Mich., assignor of fractional part interest to Lyle W. Roeder, Adrian, Mich.
Filed July 7, 1969, Ser. No. 18,077
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D74—9



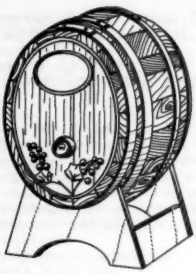
220,459
HEATER HOUSING FOR HAIR CURLERS
Marvin W. Litman, Prairie Village, Kans., assignor to The Songrand Corporation
Filed Jan. 16, 1970, Ser. No. 20,954
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



220,460
HAIR BARRETTE
Elise Evelyn Hawkins, Shaw University, Box 276, Raleigh, N.C. 27602
Filed Mar. 30, 1970, Ser. No. 22,107
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

220,461
COMBINED HANDBAG AND UMBRELLA HOLDER
Leonard F. Soyka, 14 Devon Road, Great Neck, N.Y. 11023
Filed Aug. 29, 1969, Ser. No. 18,922
Term of patent 7 years
Int. Cl. D3—*02*
U.S. Cl. D87—3

220,462
BEVERAGE DISPENSER
William T. De Van and Ken Van Dyck, Weston, Conn., assignors to Auberge Corporation, Westport, Conn.
Filed Oct. 31, 1969, Ser. No. 19,871
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D94—3



220,463
KNIFE
James F. Pugh, Sr., 917 Carpenter St., Azle, Tex. 76020
Filed June 4, 1970, Ser. No. 23,304
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D95—3

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF APRIL, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Kabi: *See—*
Melander, Bengt Olof; Hanshoff, Gunnar; Granstrand, Bengt Ragnar Gustaf; and Olsson, Berit Margareta, 3,574,721.

ABC Industries, Inc.: *See—*
Rosenow, Monroe H., 3,574,963.

Abdellatif, Ala E. Dine. Process for treating rice husk. 3,574,816, Cl. 264-333.

Abex Corporation: *See—*
Hamilton, William M., 3,574,493.

Abrams, William Bernard; and Svenson, Sven Evert, to Hoffmann-La Roche Inc. Compositions comprising hydrochlorothiazide and 3,4-dihydro-2(1H)isoquinoline carboxamidine. 3,574,836, Cl. 424-246.

Actor, Philip Paul; and Pagano, Joseph Frank, to Smith Kline & French Laboratories. Anthelmintic compositions and methods employing esters of benzimidazolyl carbamic acids and their thio analogs. 3,574,845, Cl. 424-273.

Addressograph-Multigraph Corporation: *See—*
Scranton, Robert J., 3,575,108.

Aerojet-General Corporation: *See—*
Shiflet, William F., 3,574,323.

Aeroquip Corporation: *See—*
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Von Molnar, Stephen: *See—*
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Von Pongracz, Leslie R., to Pon-Sad, Inc. Wall mounted booth. 3,574,394, Cl. 297-158.

Von Sturm, Ferdinand; and Kohlmuller, Hans, to Siemens Aktiengesellschaft. Device for producing gaseous reactants particularly hydrogen and oxygen for fuel cells. 3,574,560, Cl. 23-282.

Vordahl, Milton B., to Crucible Inc., mesne. Metal articles. 3,574,569, Cl. 29-196.

Vriend, Joseph A. Anti-knock bearing device. 3,574,293, Cl. 902-84.

Vuia, Romul E., to Combustion Engineering Inc. Combination fossil fuel and superheated steam nuclear power plant. 3,575,002, Cl. 60-102.

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Wagner, Jack F.; and Veenhuizen, Edward L., to Lilly, Eli, and Company. Method of improving the conception rate in ewes. 3,574,829, Cl. 424-100.

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Wakefield, Gene F., to Texas Instrument, Incorporated. Dispersion strengthened metals and process for making same. 3,574,661, Cl. 117-26.

Wakonig, Friedrich, to Waagner-Biro A.G. Installation for one or more stacks. 3,574,982, Cl. 52-148.

Waldmann, Ladislao. Device for securing handles to cleaning elements or the like. 3,574,420, Cl. 306-29.

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Wallace, John, to Burroughs Corporation. Liquid applying apparatus. 3,575,135, Cl. 118-243.

Wallace, Theodore C., to Dow Chemical Company, The. Blending of particulate materials in predetermined quantities. 3,574,344, Cl. 259-18.

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Weber, Johann, deceased (by Weber, Helene, heir and legal representative); and Neeff, Rutger, to Farbenfabriken Bayer Aktiengesellschaft. Process for the continuous dyeing of articles made of polyacrylonitrile or copolymers containing acrylonitrile. 3,574,512, Cl. 8-4.
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Wolfe, Merritt, to Goodyear Tire & Rubber Company, The. Knife for cutting rubber and the like. 3,574,937, Cl. 30-123.3
Wolff, George D. Speed and temperature sensing devices. 3,574,475, Cl. 415-17.
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Hawkins, Elise E. Hair barrette. 220,460, 4-13-71, Cl. D86—10.
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Karle, John D. Telephone number chart. 220,457, 4-13-71, Cl. D74—1.
Klopp, Edward M., to The Chemical Rubber Co. Dry ice generator. 220,454, 4-13-71, Cl. D67—2.
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Litman, Marvin W., to The Songrand Corporation. Heater housing for hair curlers. 220,459, 4-13-71, Cl. D86—10.
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Norquest, Peter E. Waste receptacle or the like. 220,452, 4-13-71, Cl. D49—35.
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Senteney, Edna R. Flag or similar article. 220,436, 4-13-71, Cl. D29—17.
Sewell, James C., and G. T. Westlund. Combined temperature control panel unit and support for soldering irons and the like. 220,434, 4-13-71, Cl. D26—1.
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Szymanski, Michael J., to Syracuse China Corporation. Dinner plate or similar article. 220,450, 4-13-71, Cl. D44—15.
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Sewell, James C. and Westlund. 220,434.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 13, 1971

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	3,574,877	
104.3	3,574,878	
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257.06:	3,574,884	
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17	3,574,893	
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26	3,574,245	
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21— 91	3,574,528	
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232	3,574,552	
253	3,574,553	
23—253	3,574,554	
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284	3,574,562	
361	3,574,563	
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68	3,574,246	
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205.15:	3,574,247	
217	3,574,901	
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25— 7	3,574,904	
131	3,574,905	
27— 4	3,574,906	
28— 1.4	3,574,249	
19	3,574,250	
41	3,574,907	
72	3,574,908	
29— 25.13:	3,574,909	
.14:	3,574,910	
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625	3,574,933	
626	3,574,934	
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193	3,574,938	
286	3,574,939	
32— 14	3,574,940	
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70	3,574,945	
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184.5	3,574,946	
34— 9	3,574,948	
16.5	3,574,949	
23	3,574,261	
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219	3,574,953	
35— 12	3,574,262	
19	3,574,954	
42.5	3,574,955	
48	3,574,263	
66	3,574,956	
76	3,574,957	
36— 2.5	3,574,958	
7.6	3,574,959	
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142	3,574,962	
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42— 1	3,574,965	
6	3,574,264	
43— 8	3,574,966	
17.2	3,574,967	
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44— 62	3,574,575	
66	3,574,574	
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46— 22	3,574,968	
101	3,574,969	
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240	3,574,266	
47— 7	3,574,970	
48—214	3,574,578	
49—350	3,574,971	
51— 3	3,574,972	
92	3,574,268	
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237	3,574,974	
266	3,574,975	
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284	3,574,977	
307	3,574,579	
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374	3,574,984	
463	3,574,985	
53— 35	3,574,986	
281	3,574,270	
285	3,574,271	
55—193	3,574,987	
418	3,574,988	
56— 10.7	3,574,989	
202	3,574,272	
208	3,574,990	
57— 77.3	3,574,273	
140	3,574,991	
58— 23	3,574,274	
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57.5	3,574,994	
125	3,574,995	
59— 78	3,574,996	
60— 13	3,574,997	
23	3,574,275	
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51	3,574,999	
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102	3,575,002	
203	3,575,003	
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46.5	3,575,005	
72.6	3,575,006	
62— 26	3,575,007	
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103	3,575,008	
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375	3,575,010	
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476	3,575,012	
63— 12	3,575,013	
64— 14	3,575,014	
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23	3,575,015	
65— 1	3,574,581	
4	3,574,582	
22	3,574,583	
65— 59	3,574,584	
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152	3,574,586	
158	3,574,587	
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66—	3,575,016	
126	3,575,017	
132	3,575,018	
187	3,575,019	
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17	3,575,021	
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389	3,575,024	
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92	3,574,593	
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311	3,575,032	
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339	3,575,034	
354	3,575,035	
402	3,575,036	
409	3,575,037	
410	3,575,038	
73— 16	3,574,281	
35	3,575,039	
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67.8	3,575,042	
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92	3,575,045	
95	3,575,046	
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146	3,575,047	
178	3,574,283	
190	3,575,048	
194	3,575,049	
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362	3,575,053	
398	3,575,054	
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74— 5.34:	3,575,093	
10.52:	3,574,285	
15.2	3,575,056	
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242.1	3,574,287	
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425	3,575,060	
473	3,575,061	
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512	3,575,063	
520	3,575,064	
665	3,575,065	
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759	3,575,067	
850	3,574,288	
864	3,574,289	
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129	3,574,603	
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134	3,574,607	
149	3,574,608	
153	3,574,609	
75—165	3,574,610	
	3,574,611	
171	3,574,604	
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76— 82.2	3,575,068	
81— 58.1	3,575,069	
416	3,575,070	
82— 14	3,575,071	
24	3,575,072	
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83—175	3,574,291	
201.06:	3,575,074	
409	3,575,075	
422	3,575,076	
524	3,575,077	
84—173	3,575,078	
85— 5	3,575,079	
45	3,575,080	
88— 1.5	3,575,081	
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89— 1	3,575,083	
.5	3,575,084	
41	3,575,085	
90— 13.5	3,575,086	
91— 37	3,574,292	
92— 23	3,575,087	
84	3,574,293	
98	3,575,088	
187	3,575,089	
93— 33	3,575,090	
36	3,575,091	
44.1	3,574,294	
94— 1.5	3,575,092	
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95— 10	3,575,095	
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89	3,575,099	
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	3,575,101	
96— 1.1	3,574,613	
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27	3,574,616	
35.1	3,574,617	
48	3,574,618	
55	3,574,619	
66	3,574,621	
67	3,574,622	
73	3,574,623	
89	3,574,624	
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99— 2	3,574,632	
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83	3,574,634	
91	3,574,635	
93	3,574,636	
94	3,574,637	
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138	3,574,639	
140	3,574,640	
144	3,574,641	
174	3,574,642	
207	3,574,643	
391	3,575,102	
100—215	3,575,103	
218	3,575,104	
101— 35	3,575,105	
41	3,575,106	
56	3,575,108	
93	3,575,107	
401.1	3,575,109	
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102— 8	3,575,110	
22	3,574,298	
37.8	3,575,111	
38	3,575,112	
42	3,575,113	
70.2	3,575,114	
104— 23	3,575,115	
	3,575,116	
104—173	3,574,299	
105—197	3,575,117	
366	3,575,118	
106— 15	3,574,644	
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41	3,574,646	
110	3,574,648	
193	3,574,651	
278	3,574,652	
279	3,574,653	
309	3,574,654	
110— 8	3,575,119	
112—136	3,575,120	
221	3,575,121	
113—116	3,575,122	
114— 66.5	3,574,300	
67	3,575,123	
165	3,575,124	
235	3,575,125	
115— 1	3,575,126	
12	3,575,127	
116— 57	3,575,128	
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114	3,575,130	
117— 6	3,574,656	
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62.1	3,574,620	
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76	3,574,667	
	3,574,669	
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213	3,574,681	
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235	3,574,683	
237	3,574,684	
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128— 2.1	3,574,305	
214.4	3,574,306	
130— 24	3,574,307	
137— 66	3,574,308	
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138— 96	3,574,312	
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141—349	3,574,314	
143— 6	3,574,315	
152—231	3,574,316	
313	3,574,317	
157— 1.17:	3,574,318	
166—304	3,574,319	
172—202	3,574,320	
177—247	3,574,321	
180—102	3,574,322	
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271– 61 : 3,574,348
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